

A CONTROLLED EXPERIMENT
ON RURAL HYGIENE IN SYRIA

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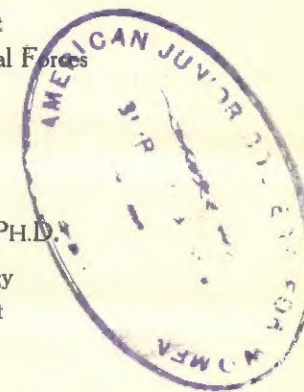
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A CONTROLLED EXPERIMENT
ON RURAL HYGIENE IN SYRIA

A Study in the Measurement
of Rural Culture Patterns and of Social Forces

STUART CARTER DODD PH.D.

Associate Professor of Sociology
American University of Beirut



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PREFACE

The aim of this study is to contribute to quantitative sociology. A field of study becomes a science when it employs the scientific method. This in general starts with observation, proceeds through induction to systematization of the phenomena, and then verifies its hypotheses experimentally. Observation, to be of the rigorous sort demanded by science, must get beyond the stage of qualitative concepts and develop quantitative units and instruments of measurement. The present study aims to do this in one little corner of the field of rural sociology—that of hygienic culture patterns in Syria.

While much of this hygiene scale is of local interest only, the analysis of errors in social surveying and the technics for measuring these errors may be of more general value. Similarly the system of concepts, defined in equations, leading up to the formula for social forces may prove to be useful in all the social sciences.

Three types of readers were kept in mind in the presentation of the data of this study. There is first of all the scientific reader who is interested in the technics and the theory primarily. There is the social worker or health officer who is interested in the practical utility of this scale in working upon hygienic problems. There is the student of local conditions who wants to know more about the life of peasants in Syria. The scientific reader will find most of interest in Part I, dealing with the measuring instrument, and in Part IV, dealing with the equations constituting the theory of social forces. The social health worker may turn to the exhibits of the scale and the sections giving administrative directions for using it and the norms that are graphed in Part II, Hygienic Status. The description of the agencies (Part IV C) which generated the social forces will also interest the social worker. The student of local culture will be best repaid by skipping the technical Part I entirely, and beginning with Part II with its general cultural background and detailed graphs with interpretative comments on each hygienic culture pattern. He may then care to go on and see the extent of progress after two years of education (Part III).

To aid readers of diverse interests in finding what they want readily, an extensive index is provided. An attempt has been made to consign less important detail to footnotes or to the appendices in order not to cumber the text with too much technical minutiae. A large part of the data is omitted here. All the graphs of the data from the preliminary Form A, which are not presented in this volume, may be consulted in bound volumes of typewritten manuscript in the library of the American University of Beirut. (See Department of Sociology Year-book, Vol. III).

A warning to the reader is needed. He should not assume that these rural samples and this urban sample represent the entire peasantry or city folk of Syria. No such claim is here made. It is probable that these rural samples represent the lowest extreme of Syrian peasantry and the urban sample was expressly selected to represent the upper extreme of Syrian society. For, if a scale can differentiate satisfactorily at each extreme, it will be adequate for the intermediate ranges. Consequently the reader is warned that the conclusions drawn apply to these particular samples and may or may not represent rural and urban life more generally. In the text and the graphs the labels "rural" sample and "urban" sample are repeatedly used. It would become absurdly wearisome to qualify them every time.

This warning is further needed in that the samples studied are very small. From the point of view of an actuary they are entirely inadequate. It was experimentally found, however, on taking further samples that increasing their size did not appreciably increase the stability of the results. With limited funds and personnel it was thought best, therefore, to make intensive studies of eight small samples. The trends discovered among these evaluated the items of the hygienic scale and refined it to a simpler and more accurate instrument with which more extensive studies on larger samples can profitably be made.

Acknowledgements

The Near East Foundation through its travelling clinic, in charge of Miss Anne E. Slack, R.N., cooperated throughout with this controlled experiment. As the agency conducting the welfare work, it generated the social forces and produced the progress which this study sought to measure.

Appreciation is expressed for the courtesy of the officials who facilitated this study—M. Burnier, the Commissioner for Refugees from the League of Nations, and Captain Vuilleoud, the French resident Advisor in the province of Masyaf.

The author of this study is greatly indebted to the following students and to others who as surveyors gathered most of the data during the six expeditions :—

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ABSTRACTS
PARTS I, II, III, IV

ABSTRACT OF PART I.—A HYGIENE SCALE

Hygiene in this study means all the knowledge, practices, and environmental conditions, which are under the control of the family and which tend to increase health. It is more precisely defined by the questions of this "Hygiene Scale for Families."

Form A of this scale, comprising 270 questions which were scored on a 1000 point scale, was constructed. It was administered, by technics suited to the Near East, to 345 village families. The analysis of 960 frequency distributions of the resulting data led to the selection of 55 questions for the revised Form B. This form was given to various rural groups, totalling 256 families.

The scale score of Form B showed a correlation of :

- .76 with an index of mortality
- .52 with an index of morbidity
- .65 with an index of longevity
- .81 with an index of income
- .94 with each of the 5 Sections of the scale, on the average.

Constant errors, in the form of a statistically significant difference between mean scores, were proved not to exist between different samples of plains villages studied, between different informants in one family, between different interviewers, or between different scorers.

Variable errors resulted in the following correlation coefficients in a standardized rural range :

- .91 between male and female informants in the same family
- .94 between different interviewers of the same informants
- 1.00 between different scorers of a set of schedules.

All seasonal errors were eliminated by comparing data from one season only.

The Form B schedule contains full and simple instructions for surveying, interviewing and scoring in the peculiar conditions of primitive Syrian villages.

A Brief Scale of 20 questions yielding 500 points of score was selected for quicker and more extensive surveys. The reliability correlation of this was .90 and its correlation with the full scale was .98.

ABSTRACT OF PART II.—HYGIENIC STATUS

The hygienic status of a group is defined as its average hygiene score. As a background to the data on the hygienic conditions in the Syrian villages included in this study, those villages are described. Geographically the seven villages are in the Alaouite State, in a plain bounded by a mountain range, barren uplands, and the Orontes River. The death rates of various samples ran well over 50 per 1000, and the high infant mortality kept the average longevity well below 10 years. The historical vestiges in the region and the immediate events leading up to this study are described.

The rural income is from agricultural and pastoral sources, averaging around 100 Syrian pounds annually per family (\$80.00 at par). The land belongs to feudal lords. The taxes range from 1/8 to 1/5 of the gross income. Debts are large. The houses are windowless mud huts, shared with the animals.

The peasants are mostly Shiite Moslems except in one village where they are Armenian Christian refugees. Polygyny, wife-beating, and barter for wives exist. These Alaouites are almost totally illiterate, but the Armenians average several years of schooling.

For surveying, the village is a natural, self-contained unit as only Bedouins, but no peasants, live between villages. An urban sample of well-to-do, well-educated families in the port city of Beirut are described as representing the opposite extreme of Syrian society.

Following this description of the background there are presented frequency distributions of the answers to all the fifty five questions on hygiene of Form B of the scale. These graphs show the data from 100 "normal", rural families, identified by number, compared with the data from the urban sample. The graphs are classified in the following sections: Remedies for Sickness, Infant Hygiene, Food and Cleanliness, Insects, and Housing. The unpublished data from Form A are drawn upon to add some notes on sex hygiene and on the differences between hygienic practices in the spring and in the summer, as determined from a resurvey of one village.

In conclusion, the outstanding hygienic features of the villages are summarized, and a semi-tabular comparison of the chief unhygienic features of rural life compared with upperclass urban life is presented.

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In conclusion, the outstanding hygienic features of the villages are summarized, and a semi-tabular comparison of the chief unhygienic features of rural life compared with upperclass urban life is presented.

ABSTRACT OF PART III.—HYGIENIC PROGRESS

A social change in a population may be measured as any reliable difference between its status at one date and its status at a later date. If the change is in a direction desired by the population undergoing it, it is here defined as progress. Evidence is presented from the statements, petitions, and actions of the villagers to show that they desire change towards a higher hygienic status.

To measure such hygienic progress, a controlled experiment was attempted. The villages, whose hygienic status had been measured by a survey in 1931, were divided into an experimental sample and an equated control sample. The experimental sample was then educated in hygiene for two years by an itinerant clinic. A resurvey in 1933 measured the change. The amount of progress in the control sample was deducted from the amount of progress in the experimental sample in order to isolate the progress attributable to the clinic from that due to other agencies. The control sample of forty families showed a reliable gain of 18%, while the experimental sample showed a reliable gain of 20%. The excess gain of the latter is not statistically reliable. After an analysis of the detailed changes in each of the five sections of the hygienic scale, and after a discussion of the possible explanatory hypotheses, the conclusion is reached that the gain in both samples is probably due to the influence of the clinic. The control sample was not sufficiently isolated from the experimental village to prevent diffusion of the new hygienic culture patterns from the latter to the former.

For comparison with the above samples of Arabic-speaking Alaouite villagers the progress in a demonstration sample was measured. This sample was a village of newly-settled Armenian refugees. No similar village existed to pair with it as a control so that the scientific technic was inferior in this respect. The gain in this sample was 66%. It is attributed to the clinic and to economic factors in undetermined shares.

The annual rates of progress in the different samples and the differing rates in the more ideational and in the more material culture patterns were measured.

ABSTRACT OF PART IV.—HYGIENIC FORCES

A system of concepts, defined by equations and based on three fundamental units, is offered as a means of measuring social forces. The three basic units are persons, years, and indicia, which measure population, time, and the amount of any social characteristic. In this study the characteristic is hygiene and the indicia are the scores of this hygiene scale.

Compound concepts are readily derived. The status of a population is its average score. Social change is the difference in status at two dates. The amount of change divided by the time required to achieve it is the rate, or velocity, of change. The rate of change of this velocity is social acceleration, the speeding up or slowing down of social change. This acceleration times the population accelerated is defined as social force. It is that which stimulates a population to speed up its social change (or the reverse). A unit, called a "stim", is suggested, and is defined as one person changed one indicium per year per year. Further concepts of social momentum, impulsion, etc., are defined. The probable error formulae of these concepts are indicated in outline but their rigorous mathematical derivation is reserved for fuller publication elsewhere.

In a brief discussion of this theory it is pointed out that there are as many kinds of indicia as there are measurable characteristics in a society. The possibility of technics to unify or interrelate them is indicated. The assumptions underlying this system of concepts are pointed out in the form of a paraphrasing in terms of social concepts of Newton's laws of motion. The relation of these concepts to Professor Eubank's "Concepts of Sociology" is indicated.

This theory of measurement of social forces required three surveys, but this experiment had already been carried out with but two surveys before the theory emerged from it. Consequently, it was necessary to make some assumption about the hygienic conditions prior to the first survey. Two alternative assumptions were made and followed through to their conclusions to determine the number of "stims" of hygienic force that had been generated in these villages in the two year period of this experiment.

The Clinic of the Near East Foundation and other agencies generating this force are described through a statistical analysis and through excerpts from narrative reports for deeper insight.

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PART I

A HYGIENE SCALE

The Measuring Units

DEFINITION :

In setting out to measure the hygienic status of a population, to measure their progress over a period of years, and to measure the forces producing it, it is essential to define the term hygiene first and then its measuring scale and units.

Hygiene is here used to mean all the knowledge, practices, and environmental conditions which tend to increase health as measured by decreased morbidity and mortality rates and increased longevity. It is not health itself but only the known causes of it and those which are under the control of the individual, or of the community.

Part I defines precisely hygienic "knowledge, practices, and conditions" as the items of this scale for family hygiene (Form B). These items are quantitatively summarized in a hygiene score, s.

A. *Construction of Form A.*

There is no one unit which naturally measures knowledge, practice and environmental conditions conducive to health. A host of qualitatively different data has to be collected and then

somewhat arbitrarily reduced to scores, points, or credit-values. This makes possible a quantitative study of the hygiene of a group. It also makes possible a further refinement of the measuring instrument itself through the use of appropriate statistical technics.

The general specifications to be achieved by the construction of such a scale may be summarized under the headings of *validity*, *reliability*, and *administration*.

1. *Specifications.*

a. *Validity.* A scale to be valid must measure in some demonstrable way what it claims to measure. This scale claims to measure (1) *hygiene* (2) *of families* (3) *in Syrian* (4) *villages.*

(1) To prove that the scale measures hygiene its scores must correlate with some index of health in a group of people, or communities. High correlation coefficients in a population of defined range or variation are a necessary condition for such proof. But they are not a sufficient proof. For if two series of phenomena are causally related they must be correlated, but they may be correlated without any relation of cause and effect between them. In addition to the mutual association demonstrated by a correlation coefficient, there must be relation in time of antecedent and consequent, to show a cause and its effect. In interacting social phenomena it is difficult to separate two phenomena in a clear-cut test such as by making each act alone and see if the other follows. Fortunately, sociologists may build on the medical sciences, in which the causal relation of much of hygiene to health has been established experimentally. Therefore the agreement of medical experts that certain practices are "hygienic" ones and their correlation with health indices will be considered a necessary and sufficient proof of the validity of the scale.¹

Next, the claim of the scale to measure *family* hygiene must be proved by showing that a score represents the practices of

1. As some practices are of dubious or controversial value in medical opinion it is well, in case of doubt as to whether to include such items in the scale, to err on the side of over inclusion. It is easy to reject all such information in statistical treatment, but impossible to treat it if the original schedule did not secure it. Therefore the scale should include many items to make possible the later sorting of the more valid from the less valid. Minuteness in observing data is essential in science, although this minuteness goes far beyond the needs of social workers who may want to use such a schedule card later.

the family as a whole and is independent of the deviations of individual members. If the scores obtained from two different informants in each family correlate highly it will be a proof of this claim.

The scale must be appropriate to conditions in *Syria* and similar regions of the Near East. For example, it must deal with anti-malarial practices, and not anti-yellow fever practices, as the former sickness is an important one here, while the latter is non-existent.

As conditions vary in different parts of the Near East flexibility of the scale in order to adapt it to local conditions is essential. The answers to the questions must be recorded independently of any weighting in scoring in order to enable a different scoring or weighting system to be used in another locality where conditions may be different.

The scale must fit *rural* conditions. It must be possible to record and score all the variety of conditions, practices, and knowledge conducive to health which may be found in the villages. The distribution curves must not show a "pile up" of cases at either end due to the scoring system having a "cellar" or a "roof" which kept those cases from being spread further downwards or upwards. Validity in this respect will be proved if all answers given by Syrian villages can be recorded and scored on the scale without modes at either extreme of the frequency distribution graphs.

b. *Reliability.* To be reliable any measuring instrument must give the same results when reapplied to the same phenomena. Discrepancies in results are errors of measurement. If these errors tend to be in one direction they are constant, or one-way, errors, but if sometimes in one direction and sometimes in the other they are variable, or two-way, errors.

Constant errors are measured by differences between the average score of one observation, or survey, of a group and the average score of a second survey. This difference when divided by its standard deviation becomes the significance ratio. If this ratio is less than 3, scientific convention agrees that the observed error may be attributed to chance (sampling error). If the ratio is above 3, the probability of its occurrence by random fluctuations of sampling is approximately one in a thousand at most. This is so improbable as to mean with a high degree of probability that the observed difference is a "significant" constant error.

Variable errors may be measured by the correlation coefficients between the two surveys. A coefficient over .95 will here be considered to indicate high reliability or small variable error.

In order to eliminate the constant and the variable types of error, they may be analyzed into the following categories, classified by sources.

(1) *Sampling error.* A frequent source of error is from smallness of the sample. The formulas for the probable error, or for the standard error, of sampling measure the size of this error. To be reliable or "significant" all indices based on this scale must be larger than three times their standard error.

(2) *Seasonal error.* The smaller errors due to differences between informants, surveyors, etc. although included in the sampling error, may be analyzed out separately. It is better experimental technic to eliminate the component factors than to depend on the fact that sampling fluctuations tend to cancel each other when the sample is sufficiently enlarged.

As the scale seeks to measure the hygiene of a family throughout the year, it should not give different results at different seasons. For a reliable scale the results of surveys at different seasons must show a negligible constant error (as measured by the significance ratio) and a negligible variable error (as measured by the correlation coefficient).

(3) *Informant error.* The amount of informant error considered permissible is when the correlation between the scores derived from different informants in each family exceeds .90. It is possible to group the scores from men and women, or from adults and minors, or from married and unmarried, separately, and thus determine the bias that sex, or age, or marriage, may introduce into the informant error.

(4) *Interviewer or surveyor error.* The permissible amount of error due to different surveyors interviewing a family may be specified as a correlation coefficient of not less than .90 between the scores from different surveyors. Where surveyors work in pairs this error may be split into a questioner error and a recorder error. The questioner error may be determined by repetition of the schedule on a group with a different questioner. The recorder error may be determined by having two or more

recorders listen to the same informants and record the replies simultaneously but independently.

(5) *Scorer error.* The permissible amount of error due to different scorers may be specified as zero. Differences between different scorers can, and should be, completely eliminated by using the proper technics, hereinafter described.

(6) *Schedule error.* If a schedule putting the questions in different form were made up, after the manner of "alternate forms" of an intelligence test, the score of a family might become different. This schedule error, in its constant or variable form, is measurable by either the significance ratio or the correlation coefficient.

The sampling error does not always include the seasonal, informant, interviewer, scorer, and schedule errors. If in one set of scores there are included variations in season, informant, etc. the sampling error includes these. But if the set of scores keeps a contributing error constant, as in surveying at one season only, or with one interviewer, or with one scorer, or with one schedule only, then this error is not included in the probable error of sampling nor measured by it. This exposition suggests how these contributing errors may be eliminated and also how they may be measured separately or in combination.

A reliable scale should reduce all errors to a minimum and then measure the amount of that minimal residual error. Only when the degree of accuracy of a scale is thus known can data yielded by it be of scientific value.

Objectivity and quantitiveness. Throughout the above specification of the reliability, (which has been set as a goal to be achieved by the constructor of this scale), there have been two principles implicit but which need to be emphasized as corollaries of the specification of reliability. The first is that all the items must be cast in objective form with answers in definite printed categories to be checked such as "Yes" or "No," "1," "2," "3," e.g. "Menu : Cereals (), Milk (), Vegetables (), Meat (), or Fats ()," etc. If subjective and relative answers, such as "Very much," "Good," etc. are to be inserted by the surveyor at his own free will, there will be no standardization for discovery of uniformities. Also differences between surveyors will increase the surveyor error enormously.²

². For full discussion of the principles of constructing schedules see such standard works as :

The second implied specification is that the data must be "quantifiable"—to coin a term expressing the idea that while the raw data may be secured in qualitative form it must be capable of being converted into quantitative form. Appropriate statistical treatment can then in scientific fashion induce patterns, interrelations, and uniformities with known limits of error. Exact study of the phenomena and simultaneous refinement of the instrument of observation then become possible.

c. *Administration.* Next in importance to the specifications of scientific validity and reliability of the scale are ease and simplicity of its administration.

(1) *Self-instructing.* The schedule that is put into the surveyor's hand should contain all necessary directions for its use and for ruling on unusual cases as they occur. These directions should accompany each item and should not involve consulting an index or manual of instructions or otherwise distracting the surveyor's attention from his conversation with his informant.

(2) *Lay surveyors.* The technic should be simple enough so that secondary school graduates may be trained in a week to carry it out. It should not require a doctor or trained nurse to administer.

(3) *Acceptability.* The questions should be acceptable to the informant, the government, the priest and other influential persons whose opposition, if aroused, would obstruct the gathering of data. To be acceptable to the informant questions of sex practices, income, ages in the zone of military conscription and some others must be avoided. To be acceptable to the government, questions of political import as to taxes, reactions to official steps towards sanitation or absence of them must be carefully phrased. To avoid other opposition, religious or other prejudices must not be unduly excited. Thus there should be no appearance of doubt as to the value to health and mortality of the religious pronouncements in regard to eating pork, circumcision, etc. To put this specification positively the schedule should win the cooperation of everyone through obviousness of its relation to health and the reduction of disease—a universal human desire.

Elmer, Manuel C. *The Technique of Social Surveys*, Jesse Ray Miller, 1927.
Lundberg, G. A. *Social Research*, Longmans, Green & Co., 1929.
Chapin, F. S. *Field Work and Social Research*, Century, 1920.

(4) *Independence of language.* The schedule must be capable of being filled in from interviews in any language. It must not depend for its reliability on standardized phrasing of questions to such a degree as to become invalid when translated.

(5) *Inexpensive equipment.* Aside from the inevitable cost of transporting and maintaining a field personnel, the survey should keep costs of such equipment as is consumed, or used, down to a few piasters or a few cents per schedule filled in.

(6) *Brevity of interviews.* In order to increase the number of schedules filled in per day and so reduce the cost of the field personnel, the interviews should not require more than an hour apiece.

(7) *Convenience for statistical study.* The scale should be so printed and arranged as to facilitate recording, scoring, tabulating, correlating, etc., with a minimum of errors of eye and maximum of clerical speed.

The degree to which these specifications were actually achieved in the finished scale will be reviewed at the end of Part I, after some intervening chapters of more detailed reporting on these specifications.

2. *Technics of construction.* (Part I, A, 2, a)

a. *Acquisition of background of rural culture.* To construct a scale with the above specifications, the author went to live for several periods of a week at a time in the villages of northern Syria. He also visited villages in Egypt, Palestine, Iraq, and Persia. He studied the Bedouins in the desert, and the Kurds in their tent encampments in the mountains. He visited families and drew them out in great detail on topics of health and sickness. His command of Turkish enabled him to have direct conversation in some Turkish speaking villages, while in the Arabic speaking villages he carried on most of the conversations through an interpreter. He accompanied the doctor and the nurse of an itinerant clinic on their visits, and in their systematic medical and physical examinations of every soul in two villages. He lectured, sometimes with the lantern, before the men and before the mothers on hygiene, leading them on to discuss their difficulties or points of view. He slept in their homes and in their tents and observed the habits of the family as to washing, defecation, sleeping, eating, and other routine patterns of life. He sat at the feet of the village barber, mid-

wife, sheikh who dispenses charms, peddlers selling drugs, and occasional rural doctors, inducing them to instruct him out of their wisdom as to the details of plying their trade.

From these experiences and the reports of private and government clinics a list of the chief diseases was drawn up. Next lists were prepared of the items, or patterns, of knowledge, practice, or environmental conditions, which seemed to be related to each disease or to health in general. In preparing this list it was necessary to avoid rejecting all folk practices as superstitious on the one hand, and to avoid accepting all western medical advice as sound in the given situation on the other hand. Folk remedies are occasionally³ shrewd cullings from the experience of generations, as in the use of pumpkin seeds for worms.

Conventional hygienic advice of the west may backfire in a given situation. Thus taking baths in the village may be a positive menace to health. The villagers' idea of a bath is a steam heating process, the "Turkish bath", which requires facilities for slow cooling off. The mud hut has no such facilities and leaves the perspiring bather helpless in drafts. Experience seems to have given them the conviction of the woman who replied to the question "Why don't you bathe the baby?" by asking "Why should I kill it with pneumonia?" Hygienic slogans such as "Bathe often" need to be either discarded, or followed up with a new and detailed technic of bathing which adapts the rule to the local culture.

b. *Trial of preliminary form of the schedule.* From the lists thus compiled a trial list of questions was hectographed on a schedule card. After each question there were printed all the probable replies. Spaces were provided after every reply for checking those which might be encountered in a given family. These trial questions were taken to two villages and tried out. The doctor and the public health nurse in charge of a village clinic went over them carefully. A class in Methods of Social Research, composed of college seniors and graduates, was first instructed in the use of the schedule, then practiced it on some cases, and then turned in written criticisms.

3. Striking historic examples of a kernel of truth in the chaff of folk superstitions are the discovery that fever is a remedy for incipient paretic paralysis from the practice by an African tribe of exposing such cases to nights in a malarial swamp; and the discovery of digitalis as a heart drug from the folk reputation of a certain witch's brew of herbs.

c. *Development of Form A and Manuals of Instruction* (See Appendix 1 for exhibits). A revised schedule, labelled "Form A" emerged from these technics of criticism. It comprised two hundred and seventy questions. Most of these questions required subsidiary questions to elicit full information. About two thousand answers were printed to be checked affirmatively with a "v" or negatively with a "o". In addition, spaces were provided after questions calling for numerical answers. The questions were grouped in twelve sections, as follows:

- Section 1 Identification data and vital statistics, including data on morbidity.
- Section 2 Remedies for sicknesses represented by cuts, measles, typhoid, smallpox, colds, fevers, malaria, headaches, abdominal pains, diarrhea, constipation, childbirth, and venereal disease.
- Section 3 Cleanliness—questions on the frequency and method of cleaning the person, the clothes, and the eating utensils.
- Section 4 Sex-questions on sex practices and hygiene. These were not to be filled in routinely but only where confidential relations could be established as the questions were very intimate and touched on local, as well as on universal, tabus.
- Section 5 Food—an inventory of articles of diet within one year and the menu for twenty four hours.
- Section 6 Water—questions bearing on the source, amount, and purity of the family water supply in summer and in winter.
- Section 7 Infants—a schedule on the infant's physical condition, diet, cleanliness, sleeping, and other habits.
- Section 8 Property—an inspection of the rooms of the house, the yard and the stables.
- Section 9 Waste—questions on the disposal of garbage and feces.
- Section 10 Insects—inquiries as to the family's knowledge about, and practice in dealing with, mosquitoes, flies, fleas, lice, and bedbugs.

Section 11 Sleep—questions on habits and facilities connected with sleeping.

Section 12 Heating—an inventory of equipment and practices for cooking and keeping warm in winter.

The schedule was drafted by hand, and plates made to enable reprinting copies as might be needed. It was spaced on both sides of a quadruple sheet fitting into a loose-leaf note book 10×20 cm., so that it could be conveniently folded in the surveyor's notebook and kept out of sight until the interviewee's confidence had been won. This was important as the first sight of paper and pencil and someone recording names is apt to fill the villager with fear of military conscription. A Manual of Instructions (18 pages) was prepared containing general directions on interviewing. These were followed by a fuller statement of each question, more detailed directions for asking and recording it, and interpretations for unusual replies. (See Appendix 1). A score card for recording the credits assigned to each answer was next built up and a Scoring Manual prepared (7 pages).

In practice all this proved to be over-complicated. In scoring the data on a filled-out schedule the scorer had to keep the schedule, the score card, and the two manuals before him to observe all the minute directions which were too many to memorize. The scoring system proved to be the weakest part of Form A and required complete overhauling and simplifying in the revised Form B later.

d. *Construction of the scoring system.* The answers on the schedule were recorded in term of numbers, yes, no, and similar objective categories. To convert them into a single quantitative scale, credit points were assigned to each answer in a rough attempt to weight its hygienic importance, or relative contribution towards reducing the specific morbidity rates and general mortality rate in the local situation.

A thousand points were considered to provide ample discrimination. The worst hygienic conditions found were considered to set the zero end of the 1000 point scale. The best, or model, hygienic conditions which might be achieved with present knowledge and present economic standards of living in the country was set at the other extreme. Since unhygienic and even dangerous practices were given zero values, some posi-

tive credit was given to practices of neutral hygienic value. Thus the application of something generally aseptic, as urine, on a cut received less credit than the application of some antiseptic, but more credit than the application of something septic, such as scrapings of shoe leather. This in no way changed the relative credits given to hygienic, neutral, or unhygienic practices but only shifted the zero point of the arbitrary scale so that the scale dealt only with positive credits. This eliminated the more complicated algebra required in dealing with both positive and negative credits.

A panel of judges was then selected to allocate the number of points out of the thousand that should be assigned to each section of the scale. After full discussion they voted independently and the average number of points was found. These averages were slightly modified to round them off in order to make the total of the averages for the sections add up to 1000. Then each judge independently distributed the points, allocated to a section, over the individual questions of that section. Again the average allotment to each question was determined and modified to make the total come to the number of points assigned to that section. Then, the points allotted to each question were distributed over the possible answers by a similar process. Provision was made for answers of equal hygienic merit which are alternatives (such as: the use of different vermicides; or the feeding of orange, tomato, or grape juice to babies, depending on availability).

Very often the points could not be assigned in a block—so many for a positive answer and nothing for a negative one—but were more suitably assigned in degrees. Thus for the seven points assigned to the use of soap (Question No. 62) the scoring formula was one point for every ten liters used annually. Again, the hygienic value of certain acts depends on their frequency. Thus the five points for washing clothes were distributed: 5 for washing oftener than once a week, 4 for weekly washing, 3 for fortnightly, 2 for monthly, 1 for seasonally, and 0 for never washing.

The allotment of points depended on subjective judgment. No more objective method seemed possible until statistical analyses, correlating the data with the criteria, should reveal weightings which corresponded more closely with objective reality. To reduce the variability of the judges' weightings (a) several judgments were averaged and (b) the judges were chosen for

expertness in some aspect of the field of hygiene. Of the nine judges utilized, one was an American public health nurse in charge of an itinerant rural clinic of the Near East Foundation operating in the villages surveyed. A second was the native doctor in the clinic. A third was the author who had been studying the rural conditions as described above. A fourth was an American doctor and professor in the Medical School of the American University of Beirut who had had several decades of practice in the country. A fifth was an American professor of pediatrics, and a practising physician, born and reared in Syria. He judged the Infant Hygiene Section especially. A sixth was a Syrian professor of public health, a practicing physician who was formerly the Director of Public Health of Beirut. Two other judges were a professor of biochemistry and his wife who had had practical experience with dietetics in charge of large Near East Relief orphanages after the war. A ninth judge was a trained social worker with experience in family case work in New York and Boston and in the superintendency of a penal settlement in India before her residence in Syria. All the judges participated in allocating points to the twelve sections and, (with one or two exceptions) to the questions within the sections. The first three judges then allocated the points within a question to its various answers.

The scoring card and manual of rules, as thus drawn up, was tried out on a group of schedules. Minor changes interpreting unusual cases were made. The manual with these revisions was used in scoring all the Form A schedules in this study.

3. *Technics of application.*

(Part I, A, 3, a)

a. *Difficulties peculiar to the Near East.* In addition to the usual difficulties of all house-to-house surveys there were the following features in the local situation that had to be overcome :

(1) Outsiders writing names has meant to the villagers (from long experience under the Turks) an approaching military conscription. When this fear is roused, the village with one accord conspires to conceal names and ages. Thus one Bedouin, Naif Ramadan, who had been positively identified to the surveyor by his own family, came in later and gave himself out as another person, a temporary visitor there, and stated that Naif Ramadan had died two years before. He even described

the circumstances of his own demise ! The surveyor pretended to accept this pleasant fiction and, having thus established confidence, succeeded in drawing out of the dead man his knowledge of the causes and treatment of the disease of which he himself had died !

(2) A second fear that may be roused is that the writing on paper will result in an increase of the tithe on crops, imposed either by the Government, or the landlord. Being illiterate, they have no knowledge of the law. They are entirely dependent on the dictum of the official, or agent, who comes and writes and goes and returns to collect in cash or kind.

(3) There are definite religious and social prejudices that the surveyor must not violate. In the last census of Syria two enumerators are alleged to have been murdered, and others required police protection, because they inquired with insufficient tact into the personnel in the harem, the women's quarters. In the more fanatical Moslem homes such information is "nobody else's business". Again, for example, in some Armenian Gregorian (Christian) homes a wife may not open her lips to utter a word in the presence of any of her husband's male relatives. If questions are addressed to her in their presence she can only nod assent or dissent. This she is apt to do not according to the truth but according to whichever answer she judges will offend the menfolks least.

(4) It is often difficult to isolate one person, or even the members of one family for a private interview. On seeing a visitor, the neighbors, if not already assembled, rapidly collect. The senior person, or the most aggressive one, frequently tries to answer all questions. One old woman typified this in saying to the surveyor "Don't ask the housewife here. She is a donkey and knows nothing. I will tell you how she does anything about which you wish to know".

(5) It is often difficult to locate a particular house and also to avoid omitting some. Like pueblo dwellings, they are often built overlapping each other in intricate ways. So even though a roof may be pointed out, the mystery of finding the doorway belonging to that roof remains to be solved. The houses and roofs of those near of kin are often interconnected, having entrances different ones of which are used according to the time of year, or degree of recovery from a family quarrel.

(6) It is sometimes difficult to define a "family". Under the patriarchal system, still widely existing in Syria several

married sons with their children and attached in-laws may often be reckoned as one "beit", or family household. The criteria of living under the same roof and eating together were added to the usual criterion of close blood kinship to determine whether to count several married couples as one family or several.

(7) Dialects presented a further, though minor, difficulty. Both the Arabic and the Turkish speaking surveyors found the villagers ignorant of the standard colloquial names for various diseases, vermin, etc., for which they had local terms of their own. Until these were discovered and listed confusion often occurred.

b. *Selection and training of surveyors.* In successive years groups of about half a dozen seniors and graduate students of both sexes, who were enrolled at the American University of Beirut in the Department of Sociology's course in "Methods of Social Research", undertook the surveying as their project. The course included a study of scientific method and surveying technics, using as textbook, "Social Research", by G. A. Lundberg (Longmans, 1929). Students, whose personalities or lack of genuine interest would unsuit them as surveyors, were not accepted in the course. To this nucleus was added the American public health nurse and native doctor in charge of the village clinic cooperating with the survey; two other public health nurses; a man and a lady doctor; and two medical students with unusual qualifications in village background and keen social interest. All of these, except the American nurse, were natives speaking Arabic, or Turkish and Armenian. All the group studied the schedules, administered them in practice cases, and were coached individually and in a group before starting to work in the villages. The field work occupied each year the two week Easter vacation and part of the summer vacation.

For further practice they filled out schedules simultaneously from the replies of one person and then compared them to eliminate variation in recorded interpretations. At first they went in pairs so as to assist and check each other. Later, when the schedule was well memorized, most of them became able to do both the questioning and the recording without losing conversational rapport with the informant. The author accompanied different ones to inspect samples of their procedure. Conferences were held at each meal to present current problems, to standardize new rulings called for by the exceptional cases encountered, and to exchange experiences in handling the persons

interviewed—and their neighbors! As the group all camped together there was plenty of opportunity for discussion—and the opportunity was amply used! Each schedule when filled out was scrutinized by the director of the survey (the author) and returned to the surveyor before the second visit to the family with notes of gaps to be filled in, or points to check up or get notes upon.

The survey expedition was a radically new and adventurous experience for all the students. They entered into it with high enthusiasm and keen interest. They worked early and late, in rain and mud, on picnic meals, in flea-ridden clothes, and at any jobs from changing tires, or washing dishes, to checking scorings, or giving stereopticon talks. The author has seldom worked with any group who turned hard work into a more thoroughly enjoyable "house-party". The interest that the experience evoked in the students is evidenced by the fact that two thirds of the members of each class have voluntarily followed it up by doing some sort of social service work, or investigation, in villages during the next summer vacation.

c. *Technics for cultivating goodwill of peasants and officials.* First and foremost the travelling clinic of the Near East Foundation, with its free treatment for all, its lantern slide talks, and its demonstrations of baby care in homes, had built up a solid core of goodwill. Characteristic remarks spontaneously offered to third parties were: "Our village has become heaven since Sitt (Miss) Slack came to us", "We have no more sickness here now since she came", "Our children all died as babies. Now we begin to see toddlers playing in the courtyards all over the village. May Allah give long life to Sitt Miss Slack".

When the survey party were introduced by Miss Slack, the greater part of the suspicion that they might be secret agents of the tax collector or army recruiting officers was set to rest. Minor aids in easing this fear were that no writing was done or papers shown, until, after some conversation, the household had expressed their willingness to reply to questions and to have the answers written down. Data on the baby and on diet were collected first and names later to avoid opening with the usual government inquiry about identities. Inquiry as to ages was casually slipped in and not pressed if reluctance was encountered. In Form B all questions dealing with crops, cattle, or income-producing property were omitted.

The presence of women students, nurses, and a lady doctor in the three survey parties completely met the difficulty of getting

data about the women in Moslem homes. The presence of Christian and Moslem surveyors, quoting to villagers of each religion his own Holy Book and knowing their prejudices, avoided antagonizing on this score.

A typical process of "warming up" a village where the clinic had not been operating was as follows. First, of course, the appropriate government officials (here the kâim-makâm and French "advisor") were called upon and their endorsement secured. Next the absentee landlords were usually seen to prevent them getting distorted accounts of the inquiries later on. The afternoon before surveying, an auto would roll into the village square and discharge a doctor, a nurse, a skillful leader of recreation, someone primed to give the lantern slide talk, and the American professor of sociology who was directing the survey. While the director with an interpreter saw the mukh-târ (headman) or village fathers, and drank the official guest coffee, the doctor and nurse would set up a clinic and send out a crier to assemble the sick. The recreational leader after a little conversation and sizing up the situation would start some game. With a volley ball he would soon have the children, or the young men, chasing around, at first a little self-consciously but soon in unaccustomed abandon. Before long a simple game of dodge ball, or relay race, would draw in more participants while the rest of the village divided their time between attending the clinic and watching and laughing over the playing. With suitable variety of games and sports and jolly conversation between, with five or six pounds of cheap candy given as prizes to the children (and ending up as a general distribution), and with some cigarettes given out, the recreational leader would get the village into a very friendly, laughing state of mind. Meantime a sheet had been hung on some wall (or in a tent among the Bedouins) and the car maneuvered into position. The crier had announced that there would be "pictures" when the flocks were in and milked. Shortly after dark the whole village and often a neighboring village would gather. A debki or folk dance was organized by the recreation leader and local talent performed. Next came pictures selected for entertainment, with no hygienic instruction, lest the questioning of next day should be prejudiced. A short speech followed with the usual exchange of compliments dear to the heart of the oriental. By this time there were usually interrupting grunts of approval, shouts of welcome, and a more dignified invitation from the elders to partake of their hospitality for a longer visit. The

The technic of cultivating good-will for a survey.



I. Part of the survey party call upon the "mukhtār" (headman). They drink coffee together, explain the purpose of the visit, and win his cooperation.

The house in this photo is in Sluki, a hamlet of ten houses used as a training ground for the surveyors. (The hand prints are to avert the evil eye).



II. The medical staff despatch a crier to collect the sick and proceed to hold a clinic beside the "healthmobile."

Miss Slack is here treating a trachoma case in the experimental village of Jib Ramle.



III. Meanwhile the recreational leader has drawn the children into a game. Next he gets the young men playing. The rest of the village watches, with broad grins at the unusual entertainment. (Jib Ramle).



IV. The games end with distribution of candy prizes in which all participants share. Ten cents worth satisfies an entire village. Equally inexpensive gifts of soap to each housewife interviewed, or cigarettes to the men interviewed, go far towards breaking down suspicion. The landlord's agents and the tax collector come only to *take* and anyone who *gives* them anything, even if he does write their names on paper, must be in a totally different category.

The photo is of Miss Slack and the children of Moushashen the demonstration village.



V. A debki, or folk dance, is suggested, and it soon makes everyone feel in a holiday mood. The photo is of a debki circle including both sexes, villagers and members of the survey party, on the annual feast day when all dress in their best finery. (Tel Salhab).



VI. The magic lantern on the hood of the auto is directed upon a sheet hung on a mud wall or in a Bedouin tent. After dark the entire population gathers with keen interest to see the "cinema."

Here the speaker works up the interest of the entire population over the reason why so many of their boy babies die, until they invite the surveyors to visit every house and study the causes. (Assili, one of the control villages.)

speaker would then ask about their health and inquire why there were so many sick people to see the doctor and why there were so many little graves in the village burying ground. Don't they care whether their boy babies live or die? This is always of vital interest to both men and women. At this point they usually asked for the help of the doctor. The doctor would offer to teach them some things that would tend to keep sickness away, but first the party must study the causes of sickness in this particular village. Would they cooperate? For not until many questions have been answered can the party fully understand what the people do that makes them sick. Promises to help by answering all questions would be offered all through the audience with the shriller voices of some of the bolder women calling down the blessing of Allah upon the party. It would then be explained to the village that the party would return in the morning and visit every house, ask many questions about their health, and then call the village together again and teach them a little about how to keep from getting sick. Eager invitations were usually given and the party drove back to camp for a late supper and the night.

In the morning the headman's family was surveyed first and then the lowlier housewives felt that the precedent of answering freely was safely set. A cake of soap as a hygienic present was given at the end of each interview. This was highly prized. The word spread rapidly, and the housewives saw to it that no home was overlooked in the day's canvass.

Meantime the doctor and nurse visited homes and followed up cases. In some villages they conducted systematic physical examinations of the entire population to secure health data to serve as a criterion against which to correlate scores on the hygiene scale. At the end of the survey, the promise to instruct them was kept. An evening of games, and debkis, was followed by a lantern slide talk on the needed hygiene and the party departed with the cordial friendship of that village.

d. *Canvassing procedures.* The necessity of scientific accuracy was impressed upon the canvassers as first in importance. The full confidence of the informant was placed next. A fuller statement of suggestions for securing this is presented in the exhibit of the Form B schedule on page 4 of the "Instructions for the Individual Surveyor".

The canvasser, or pair of canvassers, worked from a list of families previously secured from the Government tax office,

the landlord, or the headman. Wherever such a list was not available, or was incomplete, two other technics were used. One was for the director to go around the village, in advance of the survey, with the headman, systematically numbering every doorway with a heavy grease pencil and making a rough sketch map of streets and courtyards. Often a photo from some high point helped to check this. To each of the canvassers were assigned certain numbers and it was his duty to interview all the families they could find using those doorways.

The other technic was to plunge in, interviewing the first person met. During the conversation a complete list of his immediate neighbors to the north, south, east and west was elicited. Then one of these neighbors was visited and his neighbors listed. Each surveyor reported to the circulating director who gradually built up a complete list of the village families. The canvass was complete when every neighbor reported was a family already on the list and surveyed. This method requires more supervision but works well wherever a systematic list can not be secured and the dwellings are so tangled that the geographic technic mentioned above is likely to be incomplete.

e. *Reception attitudes of the peasants.* The filling out of the hygiene scale was a stimulus situation which evoked certain responses from the villagers. The present description of the characteristics of the scale would be incomplete without a description of these responses. For the relationship of the scale to the informant is an essential aspect of the scale itself.

The outstanding and almost universal attitude encountered was one of hospitality. The tradition of hospitality is still strong in the Bedouin tents and only somewhat less so in the settled village houses. It extends to the need of the stranger to be housed and fed. When he goes beyond these needs and starts asking detailed questions and writing down replies, he arouses profound distrust and suspicion. The technics described above were everywhere entirely successful in allaying this suspicion to the point where they would answer freely about their sicknesses and hygienic practices, although often they showed a lingering reluctance to divulge ages and names of males. In the village of Assilî on the first visit some hostility was encountered. This was the fault of the method which was followed, however, as the canvassing was started without any of the preparation of a clinic, recreation, explanation, gifts, or

other "warming up". On the second visit these preliminary steps were taken and the result was cordial hospitality.

As evidence of the general willingness to answer questions, after confidence has been established, stands the fact that, of the five hundred schedules filled out, not a single family refused to give the information. Not one family refused to answer any one of the several hundred questions. This is all the more remarkable as it was a private survey depending on voluntary persuasion, without any government sanctions behind it. However, this does not mean that there was no lying.

In addition to the suspicions described above, another particular one occurred in the village of Jib Ramli.⁴ Here the Government was the landlord and the people feared that the inquiry presaged a general dispossession in order to turn their lands over to the newly installed Armenian refugee village next to them. They were completely calmed when they heard that the Armenian villagers, whom they considered the Government's special protégés, were being similarly questioned.

In every village without exception the surveyors left with a cordial invitation to return. The sincerity of this was several times tested and always the welcome on returning was spontaneous and marked. Several villages later sent messages inviting the surveyors back. One wrote a formal petition in flowery Arabic, addressed in part to Miss Slack's clinic, but also thanking the "noble men" of the survey party for what they had taught the village. Once a Bedouin sheikh in gratitude kissed the director on both cheeks.

Deeper insight into the reception attitudes of the villagers may be gleaned from a few quotations and incidents. In one home of Jib Ramli the woman was surly (as an aftermath of a family quarrel). During the interview she lost patience and cried out "Why should I answer your questions? Go with them to someone else". Her husband on the roof overheard her and shouted down, "O dog, answer them! Or do you

4. The proper transliteration into English of the Arabic names proved a difficult problem. In applying the standard system of the American University of Beirut the chief difficulty was that the spelling and pronunciation of the names in Arabic was not standardized. Different individuals and different government records spelled the names of the villages in various ways. The spelling adopted throughout this study is perhaps not the best although it seemed the closest to the pronunciation of the villages. A minor divergence from the University transliteration system has been the omission of dots under the heavy letters as the linotype matrices were unable to provide these in the font adopted for this book.

want me to come and beat you? We are Alaouites and we keep our word. We promised last night to answer all their questions for the sake of our health".

In another Jib Ramli courtyard the surveyor came upon a widow, weeping alone. On sitting down beside her, the old woman poured out her trouble: "No one has come to my house to write me down on a piece of paper. You have gone to all the homes in this village and neglected me. And now, if I get sick the lady doctor (Miss Slack) will say 'There is no such person in this village. She is not written'. And I will die". Rarely is a surveyor able to give so much human comfort in merely gathering statistical data!

A householder of Sluki came to a surveyor asking for instruction as to how to keep his children from dying like flies. His refrain was, "Come and help us for the sake of Christ". The speaker, a Moslem, happened to be addressing a Moslem surveyor!

A constantly recurring response which reflected an attitude of apathy to better hygiene was, "We are poor. How can we do that? We are too poor".

B. Studies on Form A.

1. Item analyses.

(Part I, B, 1, a)

a. *Frequency distributions.* When the ten villages and the city sample had been surveyed and the schedule card had been scored, frequency distributions of the data were graphed. Graphs were made for the Scale score, the eleven Section scores, and then for each of the 270 questions. The primary purpose of this intensive analysis was not to learn the conditions in the villages. These were studied from Form B and are described in Part II, "Hygienic Status." The purpose here was to study the measuring instrument, Form A, and refine it into the revised Form B. For this, search was made for:

- (1) ambiguities in the questions,
- (2) for better categories in which to record the answers,
- (3) for discovering the range of quantitative answers so as to provide for them adequately on the revised schedule without having a "roof" or a "cellar" which arbitrarily curtailed the distribution at one extreme or the other.

The graphs were also studied to revise the scoring system in providing better weights, or allotments of points, to questions, in view of the situation as actually revealed in rural and in urban groups in Syria.

b. *Comparison of graphs from six population samples.* Each of the 282 graphs was plotted six times for the data from each of six population samples. All six were aligned on the same page or superposed to enable comparative analysis. The six samples were:

- (1) an Arab village of 46 families (later used as the "experimental group").
- (2) all the families (N=72) in a group of Arab villages (later used as a "control group").
- (3) an Armenian refugee village (N=46).
- (4) an urban sample in Beirut (N=50).
- (5) a group of Arab villages in the Bikâ' district (N=85).
- (6) the Arab village (1) resurveyed three months later in August.

These samples are fully described in Part II, "Description of the Sample Populations."

From comparisons among these graphs the following questions were studied:

- (1) Adequacy of sampling. With three similar Arab rural samples before one's eye, it was possible to see whether the findings varied from sample to sample, or were stable. Was the sample large enough to give dependable results? Of course the probable error would estimate this, but actual data provides the test of fact. It also tests to a slight extent the representativeness of the sample, which the probable error by its derivation cannot do.
- (2) Rural-urban differences. The questions which bring out the distinctive characteristics of rural hygienic culture patterns are best found by comparison of village with city data.
- (3) Arab-Armenian differences. The culture traits differentiating the primitive Alaouite peasant from the Armenian refugee villager were clearly brought

out. As these data were very detailed and not very pertinent to this controlled experiment, they are not presented in the present monograph.

- (4) Spring-summer differences. The questions most affected by the season were brought into high relief and made possible the elimination or the reduction of the seasonal variation in the family's hygiene score in the revised scale.⁵
- (5) Range of replies. The *qualitative* aspect of the range of replies means the number of categories required to record all the replies given. Thus in reply to a question as to what is put on a cut, or on a wound (No. 29), does the following list of replies provide for all the practices encountered: "Antiseptics, sterile dressing, soap and water, ashes, olive oil, salt, soot, urine, kerosene, molasses"? If such a list is not complete, its qualitative range is inadequate. The quantitative range is always amply provided for on the schedule by a space in which to write a number; but for the scoring, the limits of the range, i.e. the largest and the smallest numbers actually encountered, must be known. The Alaouite peasants gave the lowest extreme in Syrian society and the well-educated urban sample provided the highest.
- (6) Unusual cases as suggestive for hypotheses. Outstanding cases at the extremes of each frequency distribution were examined with care to see why they should be so different from the rest. The attempt was made to discover hypothetical causes which might account for them and to see whether these causes would stand when their implications were thought out and checked by examining other distributions. Thus, for example, a family with an unusually high score on the malaria question was examined. Could it be due to their being richer, or better educated, or was it an error? Examination of their position in the graph of income and notes on literacy eliminated these two hypotheses. A note was made to visit the family again, to make further

5. The data revealed by these analyses are discussed later (Part II, B and C). The process of studying and constructing the scale is the aspect dealt with in this Part I.

inquiries, and to include a check on the accuracy of their unusual malaria score. This visit revealed that they had been to a doctor for malaria and had been coached on this disease, without raising their score on other diseases. The search into this unusual score resulted as usual, in a little deeper insight into the irregularity of the hygienic forces at work in the community.

c. *Rating of items as to objectivity.* After studying the items from the graphs, the next step in selecting items for the revised scale was to rate each item as to its objectivity. The two judges who did this were the author and his assistant, who had been through the course, and the surveys, and had spent two summers in graphing and analysing the data.

A five-point rating scale was used, as follows :

Points :	Description :	Examples :
0	<i>Probably false</i> ,—bias or subjective motives for deceiving exist, which tend to cause differences between informants.	Ages of young men of military age; income; presence of lice; use of opium, etc.
1	<i>Uncertain</i> , — midway between categories above and below.	Frequency of washing fruit, hands, clothes, babies; sex questions; use of liquor; etc.
2	<i>Probably true</i> ,—yet depending on informant's verbal testimony.	Knowledge of remedies for diseases; ordinary household practices; handling of the baby, etc.
3	Items, <i>observed, judged, or checked</i> by the trained surveyor.	Cleanliness of house and yard; crowding of sleepers (number per room); protection of food from flies; use of mosquito nets; etc.
4	Items <i>measured, or copied from a record</i> , by surveyor.	Ratio of window area to floor area; size of soap cake; taxes; doctor's diagnoses; etc.

Note that the first three steps depend on the informant plus the surveyor who interprets and records; the fourth step depends on the accuracy of the surveyor, while leaving some room for subjective variability; and the fifth step is a purely objective process of reading a tape measure, or copying a record.

The questions of Form A were rated independently by the two judges, and the average of the two was determined for each question. The reliability of these ratings was measured by correlating the ratings of the two judges. The low coefficient of .41 (P.E.=.04) was found. This is partly due to differences in judgment of the two persons and partly to a function of a small range or variability of the ratings. The two extreme points on the rating scale were seldom used, leaving three categories in practice. Even though the true correlation might have been higher it would be obscured by this coarseness of grouping each variable into three class intervals.

2. Reliability analyses.

(Part I, B, 2, a)

a. *Classification of types of error.* A simple remeasurement and correlation with the first survey should reveal the extent of the variable error of measurement in the scale. But an analysis of the components of this gross variable error is essential to reduce it, or to eliminate it. For such an analysis a basis of classification was sought. Ready to hand are such categories as one finds in standard treatises on methodology, such as errors due to "deception by informant," "ignorance of informant," "carelessness of surveyor", "ambiguity of the question." But these are subjective categories. They overlap. In a given case it is often impossible to say whether the error was due to deception, ignorance, or carelessness. Consequently a more objective set of categories was sought and the following was evolved :

- (1) Sampling error—random or chance fluctuations between samples. This error depends upon the number surveyed.
- (2) Seasonal error—variation between seasons, irrelevant to the purpose in hand. This depends on the time of surveying.
- (3) Informant error—variation between different informants replying for the same family. This depends on the personnel surveyed.

- (4) Interviewer, or surveyor, error—variation between different interviewers of one family. This depends on the personnel surveying. It is divisible into questioner error and recorder error, when these two functions of interviewing are carried out by different persons (as when the surveyors work in pairs).
- (5) Scorer error—variation between different scorers of the same group of schedules.
- (6) Schedule error—variation between two forms of the schedule.

Each category of error in this classification is one which can be scientifically measured and its amount determined. It obeys the canons of classification in that the categories are clearly definable, they are mutually exclusive and their combination is all-inclusive in the situation here studied. The mutual exclusiveness requires qualification in the case of sampling error. It may be made to include, or to exclude, the other categories. If one sample of scores is composed of scores derived from different seasons (or informants, or interviewers, or scorers, or schedules) the standard deviation of the population will be enlarged by this error, or irrelevant variation. The probable error of the mean, or of any other index, will be increased. On the other hand, if the sample of scores is homogeneous as to these other sources of error, the probable error of sampling will be due to, and will measure, only the residual sources of fluctuation.

At any time an investigator may take this classification of errors of social surveying and add to the list by distinguishing further sources of variation. But such will be mostly elaborations or subdivisions of one or other of the present headings. Thus if the scoring were divided into the functions of entering scores of items and adding them up, new categories of Score Imputing and Score Computing might be used. Again, in some survey, the sex of the surveyors may require separate measurement of its influence, but otherwise it would be included in the variation due to a heterogeneity of surveyors. Of course the seasonal variation is more broadly a temporal one and might in some surveys be more appropriately measured as an annual, or even as a diurnal, variation.

b. Measurement of each type of error in Form A.

- (1) Sampling error. To measure the sampling error experimentally requires accumulating samples until stability of

results is attained. The first, second, and fifth samples (see Part I, B, 1, b) were drawn from a homogeneous culture—Shiite Arab peasants in feudal villages on the cereal-growing plains of interior Syria. The table below gives the mean scale score of each sample, the difference between the mean of a sample and the mean of the accumulated samples above it in the table, and this difference interpreted in terms of the probability with which it might arise by chance.

Table 1. Significance of Differences between Accumulated Samples. (Test for Adequacy of Sampling).

Sample	Mean	N	Standard Deviation	Difference between the Mean and the mean of the accumulated sample above it	Probability of a difference of this amount occurring by chance
1) Jib Ramli 6	343	40	43		
2) "Control villages"	340	72	44	3 (= .35 S.D. diff.)	72 in 100
3) Bikâ'	345	85	51	4 (= .5 S.D. diff.)	62 in 100

Thus it appears that the mean score is not significantly changed when the sample is enlarged from 40 to 112, and then again to 197 families. The small change in mean scores is about one half its standard deviation and is therefore attributable to chance. The chances of a difference of this size occurring in random sampling are 72 in 100, or the chances of the difference being a significant one are 28 in 100. Until they are over 99 in 100 and the probability becomes almost a certainty, scientific convention refuses to say that the samples are drawn from different populations. All this means that any one of the three samples above is an adequate one for the culture represented.

To measure the variable error due to sampling and freed of the other types of error, the correlation between split halves, as used in mental tests, was calculated. The questions on the score card were divided into "odd" items and "even" items so that the totals of the maximum odd score and of the maximum even score were equal. The actual score earned by each family

6. Two surveys of Jib Ramli (using Form A) were made, one in April and the other in August. The scores of the second survey are here taken as being more comparable with those of the Bikâ' sample, surveyed in September, and with those of the control villages, surveyed partly in August and partly in May.

on the odd items and the actual score earned on the even items were then computed. The correlations were as follows:

Table 2. Split-half Reliability Correlations

Sample	N	Raw or observed correlation	Corrected ⁷ correlation
Experimental (No. 1)	40	.694 (P.E.=.057)	.816
Urban (No. 4)	50	.86 (P.E.=.025)	.925
Both combined	90	.97 (P.E.=.004)	.985

The urban scores being much higher than the rural ones, the combination of both greatly lengthens the range and increases all correlations. Irrespective of whether the raw or corrected correlation is taken, the last row shows a very high reliability. The meaning of this is that there is a negligible variable error between random halves of the schedule. By this technic the seasonal, informant, interviewer and scorer errors are eliminated for they are constant in both halves. This correlation measures chiefly one form of the variable sampling error. It may be taken as the upper limit of reliability—a limit that will not be reached under practical conditions of resurveying with differing informants, etc.

(2) Seasonal error. No clear measurement of the seasonal variation was achieved.⁸ Instead it was completely

7. The Spearman-Brown correction to estimate the correlation between the whole scale and another of equal length, instead of between two halves of the scale. See Kelley, T.K., Statistical Method, Macmillan, 1923, p. 205 ff.

8. In the attempt to measure it, the experimental sample (1) was surveyed in the spring (April) and resurveyed in the summer (August). A partially different group of surveyors had to be used which made it impossible to control this surveyor error as would have been the case had each family been resurveyed by the original surveyor. It also proved impossible to use only the original informants in the resurvey—thereby failing to eliminate the informant error. Technics for eliminating the scoring error had not been worked out. On measuring this scoring error later it proved to be enormous. Furthermore the Clinic had been teaching the villagers during the intervening four months. Therefore, the comparison of April scores with August scores, instead of reflecting the seasonal changes alone, included informant, interviewer, scoring, and "instructional" error, in inextricable combination. The chief value of the resurvey proved to be in working out better technics for Form B (see Part I, D. 2).

The data, for what they are worth, showed a difference in mean scores of 37 points (from 306 in April to 343 in August). This is 3.2 times the standard deviation and is therefore a significant difference. The correlation of April and August scores was .36 P.E.=.09 (N=40). Similar differences in April and August scores and correlations between them were calculated for each of the eleven sections of the scale in the attempt to analyze and locate errors.

A little side study indicated that the variable error of the five types combined between the two measurements in the two seasons was practically the

eliminated in this experiment by measuring always at the same season.

(3) Informant error and interviewer error. These errors were not measured in Form A, though the technics were developed for their measurement later.⁹ The ideal technic was to repeat the schedule from a different informant, or with a different interviewer. This met practical difficulties in securing the cooperation of the family since asking the questions a second time seems to them a pointless performance, if not an actual insult to their honesty of statement.

(4) Scoring error. The involved scoring system led to many clerical mistakes. In order to diagnose the weak spots as well as to find out the total effect of these mistakes, forty schedules were rescored by a different clerk. There was no significant constant error. The correlation between scorings for the scale was .66 (P.E.=.06) and the correlations for the sections were all lower. As a satisfactory standard for scoring error is a correlation of unity this finding indicated a serious weakness in Form A. It indicated that the best way of improving the reliability of the scale would be to simplify and improve the scoring system on the revision (See Part I, D, 2, e, for the way in which this was realized).

same as the variable error between two days in the same season. Thus four families were surveyed twice in April. Taking the scores of items, or individual questions, as a variable, enables a correlation coefficient between a family's item scores several days apart to be compared with the similar coefficient from item scores several months apart. These four coefficients from the four families for the diurnal interval averaged .80, while the four coefficients for the seasonal interval averaged .75.

There was no constant error between the scores secured on different days within one week. There was a constant error between scores secured in the two seasons. The summer scores were higher than the spring scores.

⁹. While trying out different ways of preparing the attitudes of families towards a survey, four families were resurveyed with the same interviewer and from the same informant. At first, for lack of better data, an inferior technic was explored for comparing these data with resurveys using different interviewers and informants. It consisted in taking the eleven section scores as a single variable. These eleven scores of the four schedules gave 44 values in April and 44 in August. The correlation between them was .92 (P.E.=.016). This is meaningless in itself as its large size is partly due to the wide range which is spuriously created by differential weighting in the points assigned in the scoring system to each of the eleven sections. But it may be compared with a similarly derived coefficient of .80 (P.E.=.025) from twenty cases where the informant was the same in April and in August but the interviewers differed. As this difference between coefficients is four times its probable error it may be considered significant. This leads to the conclusion that the variable error was demonstrably reduced ($r=.80$ vs $r=.92$) when the resurvey used the same informants as in the first survey. This involved technic, however, was abandoned in favor of a simpler one based on better data derived later from Form B.

(5) Schedule error. With only Form A available the schedule error had to wait for its measurement until Form B was constructed. This error is described in discussing the reliability of Form B.

c. *Technic for reducing each type of error.* The statistical analyses on Form A only partially measured the various types of error. But they suggested definite technics for reducing or controlling these errors. These are summarized below with a star to indicate the technics selected for use in the revised Form B.

(1) Sampling error.

- * (a) Reduce all the component errors, as suggested below, and thus reduce the sampling error, if it includes them.
- * (b) Enlarge the size of the sample to adequate numbers. With a homogeneous culture even samples of 40 families were found to give stable results.

(2) Seasonal error.

- * (a) Always survey at one season, or standardize the questions upon one season, e.g. the amount of water used daily in July.
- (b) Combine surveys of the four seasons to average out the seasonal variation. This is arduous and expensive.
- * (c) Eliminate questions which vary with the season. (But sometimes these are important to hygiene as, for example, all questions about mosquitoes and other insects.)
- (d) Measure and correct for the seasonal variation. This requires local norms and complex correctional formulae.

(3) Informant error.

- * (a) Reduce intentional deception by all the technics described above for winning the informant's confidence.
- * (b) Secure information from two or more members of a family so as to permit either checking, or averaging their scores.
- * (c) Eliminate questions showing most variation between different informants. For example,

men did not know how frequently the baby's clothes were washed. So the question was omitted in Form B.

- * (d) Reduce errors of memory by record keeping. A diary or an account book with the family, or a clinic record, will answer questions of amount of sickness, medicine purchased, etc., better than will an informant relying solely on his memory.
- (4) Interviewer error.
 - * (a) Reduce the number of interviewers towards the ideal of having only one interviewer.
 - * (b) Rigorously train, check, and supervise interviewers to secure greater uniformity.
 - * (c) Provide fuller and simpler instructions.
 - (d) Resurvey with other interviewers and average the results.
- (5) Scoring error.
 - * (a) Develop simpler and clearer scoring system.
 - * (b) Train the scorers with careful checking and supervision.
 - * (c) Provide optimal conditions for scoring, i.e. decrease eyestrain, fatigue, distraction, etc.
 - * (d) Decrease the numbers of scorers towards the ideal of one only.
 - * (e) Rescore all schedules to check them.
- (6) Schedule error.
 - * (a) Develop two forms and average the results.
 - (b) Eliminate the questions which give different results when expressed differently in the two forms.

3. *Validity analyses.*¹⁰

(Part I, B, 3, a)

a. *Attempted study of health indices.* A number of indices of health to use as criteria in correlating hygienic scores were explored. Among them were :

10. Intercorrelations of the sections. The section scores were intercorrelated in the rural range and again in the rural-urban range. The intention was to study the structure of the hygienic culture complex through a mathematical analysis of factors common to all the sections, or to different combinations of them. But the subsequent discovery of the large size of the variable scorer error showed the scoring to be too unreliable to justify such refined statistical analysis.

Mortality rates in the form of per cent of surviving children of mothers with five or more live births; a longevity index in the form of average age at death.

Morbidity rates in the form of days spent in bed per family (1) during the previous month and (2) during the previous year.

Morbidity rates in the form of per cent of the family having malaria, dysentery, etc., (1) as reported, (2) as shown by the doctor's medical census, (3) and as shown by laboratory examination.

These were purely exploratory studies. The significant findings are presented in discussing the validity of Form B.

b. *Correlation of income and hygiene.* General observation of rural conditions led to the hypothesis that wealth and health were closely related. The owners of the dirtiest homes constantly presented the excuse, "We are too poor!" The villagers with cleaner homes, with some quinine and a purge in the house, and with healthy-faced children were often those with larger lands and flocks. It is natural to expect such a relation especially in a country where education is not universal but is available to the well-to-do.

To check the hypothesis of such a relationship existing, an index of wealth, or more exactly of income, was secured. Taxation is proportionate to agricultural income in the tithe system. The law collects (a) the tithe—one eighth of the gross crop on the threshing-floor; (b) the cattle tax (agham)—forty piasters a head on sheep and goats; (c) the land rent tax based on area classified according to irrigation and fertility; and (d) the road tax, a poll tax on every male between eighteen and forty years of age, amounting to 125 Syrian piasters a year. The tithe has been modified to the commuted tithe—an assessment on each village fixed on the basis of the average tithe of 1927, 1928 and 1929 and distributed among the families by the headman and elders, supposedly in proportion to the crop on the threshing-floor. It has thus become a less accurate index of a family's income in any one year.

The sum of the first three taxes constitutes an index of annual income of peasant families, if the few families with other sources of income such as peddlers, hired men, and headmen, are excluded. As the experimental sample, the village of Jib Ramli, was government owned ((jiftlik), the records were

more accessible than for the other villages owned by landlords in varying shares. After eliminating the few families of widows, or those whose males were boys, old men, or cripples and so tax-exempt, there remained thirty three of the forty six families. The correlation of their tax with the hygiene scale score was .33 (P.E.=.10). This is so low as to be only barely significant.

The urban income was next studied. The family of the surveyor of the fifty Beirut cases surveyed knew all of them personally and for many years. The group surveyed had been selected as being friends and business clients of the surveyor's family. Two senior members of this family estimated the gross annual income of the families surveyed. These two judgments were written down independently. They correlated at .96 (P.E.=.008). This gives the reliability coefficient for the income variable.

The average of the two estimates of income was found to correlate with the hygiene scale score at .35 (P.E.=.08). (On correcting this coefficient for attenuation it becomes .36). It thus appears that there is practically the same degree of relation between hygiene score and income in the city sample as in the village sample. ($r = .35$ and $.33$).

On combining the two samples the correlation in the long urban rural range becomes .84 (P.E.=.02). The graph is markedly curvilinear so that a correlation ratio would describe the relation more exactly and be even higher than .84.

Another marked finding is a "triangular" scatter of cases in the correlation scattergram in which there are only two cases in the "rich and unhygienic" quadrant against ten in the "poor and hygienic" quadrant, of the village sample. This is true but to a smaller extent in the city sample. Its meaning is that few of the richer persons in this group are below the average of their group in standards of hygiene; but, on the other hand, many of the poorer persons maintain above-average standards of hygiene in spite of lower incomes. Thus larger income seems here to facilitate hygiene but small income is not a barrier. *Money may be an aid to health but knowledge and effort may to some extent replace its effect, in these groups.* This finding is very significant for the prospects of education in hygiene.

4. Summary as to the degree to which Form A meets the specifications. (Part I, B, 4, a)

a. *Validity.* Proof that the scale measures *hygiene* through correlation with health indices was not realized due to imperfection and inadequacy of the health data. Data for proof that it measures *family hygiene*, in the form of agreement between scores from different members of the family, were not securable with Form A. Evidence that it fits *Syrian* conditions and *village* culture was abundantly secured in that the scale accommodated all the replies of even the most unusual cases and distributed them without a skewed "pile-up" at either extreme.

b. *Reliability.*

(1) Sampling error. There was no constant error between the three Arab village samples as differences in mean scores were only about half their standard deviations. The variable error, as measured by correlating odd items with even items, was very small as shown by the high correlation of .82 in a homogeneous rural range and .985 in a rural-urban range.

(2) Seasonal error. A significant constant error was suspected here as the mean scale score increased 37 points, (significance ratio of 3.2) in the summer as compared with the spring. A variable seasonal error was suspected from a correlation of .36 between spring and summer scale scores. But both of these findings are very much obscured by mixture with informant, interviewer, scoring, and instructional error to which they may be due more than to the seasonal factor.

The variable error between seasons seemed to be almost the same as between different days within a week, as shown by average correlations between *item* scores of .75 for a three month interval and .80 for a few days interval.

(3) Informant error. No constant error due to informants was indicated. The technic by which the variable error was measured proved over-involved, but showed how to prepare a simple technic for Form B. It showed, however, that on resurveying, variable error could be appreciably reduced by using the same informant as in the first survey.

(4) Interviewer error. Neither constant nor variable interviewer errors were measured on Form A. It served to

explore and prepare technics for such measurement with Form B.

(5) Scorer error. No constant scorer error existed but a very large variable error was shown by the correlation coefficient of .66 between two scorings of one set of schedules. The scoring system was so complex that no clerk could achieve 100% accuracy. Unless the specification of a correlation of almost unity could be achieved by revising the scoring system in Form B, the scoring of the schedule would be almost worthless. The scale would then cease to be a single quantitative instrument and become a heterogeneous collection of data. This was the chief weakness revealed in Form A requiring a revised form.

(6) Schedule error. This could not be measured until the construction of Form B should provide two schedules for comparison.

In sum, then, the degree to which the errors of Form A are within the limits of the specifications are as follows :—

Type of error	Constant error	Variable error
Sampling	Measured: Satisfactory	Satisfactory
Seasonal	" Ambiguous	Ambiguous
Informant	" Satisfactory	Ambiguous
Interviewer	Not measured	
Scorer	Measured: Satisfactory	Very unsatisfactory
Schedule	Not measured	

Of the twelve variable and constant errors which measure the unreliability of the scale, eight were measured. Of these eight, four showed errors within the limits permitted by the specifications, one showed errors larger than those limits, and three gave ambiguous results through failure adequately to isolate the errors.

C. The Revised Scale—Form B.

(Part I, C, 1)

1. Procedure in revision.

In order to create a scientific measuring instrument that should come up to the specifications more fully, Form A was completely revised. The extent of the revision is evident on a comparison of the two in the next section and in the appendix. (A key showing the equivalence of items, or an index to the item numbers, in both Forms, is also to be found in the appendix).

a. Criteria for selection of items.

(1) Selection vs. addition. The controlled experiment for which the scale was designed required that the data from the first survey in 1931 with Form A should be comparable to the survey in 1933 at the end of the experimental period. It was recognized in advance that Form A would have to be modified. Modification by dropping questions that prove unsatisfactory is simple, but modification by adding questions destroys comparability as these data exist only from the later survey. Consequently the policy was adopted that Form A should include more questions than were needed in order that Form B could be a selection of the valid items of Form A. By simply rescoring in the Form A schedules the items retained in Form B, two comparable sets of data could then be secured without sacrificing the improvement sought by making a drastic revision. Therefore the revision was limited to selecting the best questions and recasting them.¹¹ Seventy seven were chosen for Form B from the two hundred and seventy of Form A.

(2) Unreliability. Items which showed the largest variation between answers of similar sample populations, between one season and another, between one informant and another, or between one interviewer and another, were rejected, or recast, to eliminate this variability. Thus the question as to whether they washed the cow's udder before milking was inapplicable in cases where there were no cows (No. 69). It could be rejected, while retaining a question which indicates cleanliness from another angle, namely, the amount of soap used in the family (No. 62 Form A, No. 48, Form B). This was applicable in all cases. Again, the amount of water used varied with the season. Accordingly the question about the water was recast to ascertain the amount used in midsummer, in July, thus standardizing it on one season (No. 122 Form A, and No. 44 Form B). Sometimes informants differed where each answered only for himself and where there was no uniformity in the family practice, as, for example, in the number of layers of clothing worn (No. 83 Form A). Such questions were dropped. It was found that interviewers obtained different scores (as from several of the questions on remedies for sickness) depending on how thoroughly they asked subsidiary questions and drew out *all* the family's knowledge. In the

11. The one exception was the question on sore eyes, No. 28, which seemed too important to omit again. The device of interpolation (q. v.) took care of its absence in the Form A scores when these were compared later with Form B.

revision the minimum set of subsidiary questions to be asked was printed in order to reduce variation between interviewers.

As a further test the ratings by the two judges as to dependability were taken and all items below the average rating of 2 were dropped. There were a half dozen exceptions, in which the item was important and could be recast so as to bring its dependability rating to above average. The average rating of the items retained was thirty per cent better than the ratings of the original group.

(3) Validity. Several of the original judges, who weighted the items for scoring, were consulted (including the public health nurse in charge of the rural clinic) and the items considered by them to be of less hygienic importance were dropped. It was not feasible to supplement this rating of validity by experts with correlations checking each item against criteria. The criterial measures were not accurate enough, nor available on sufficiently large samples, to enable the many successive selections which would be needed to isolate groups of factors from other groups and achieve a full analysis of items.

(4) Administrative considerations. A few items which were difficult to handle in interviews were dropped. The entire section on sex had proved much more accessible than expected and had given valuable insight into village practices. But it could be secured only occasionally and thus its scores were too incomplete to deal with statistically. It was also open to unwise handling, requiring surveyors of more than the specified wisdom and training, and so it was dropped. The inspection of all the rooms of the house, for example, proved unnecessarily inquisitorial and was reduced to the important sample of the living room, the kitchen, and the W. C.

b. *Procedure in reconstructing the schedule and scoring system.*

For each question the distribution graphs of the answers from the various samples were aligned on one sheet and studied. These sheets were bound into a book with interleaves. During the first year of the experiment a systematic record was kept on the blank page of all observations bearing on that question. The headings on every such page were :

- (1) Distribution characteristics in general and between rural-urban, Arab-Armenian, and spring-summer groups in particular.

- (2) Reliability data, including the judges' ratings.
- (3) Validity data, including interrelations of items.
- (4) Surveyors' comments.
- (5) Scorer's comments.
- (6) Suggested revised wording of the question.
- (7) Suggested revised administrative directions.
- (8) Suggested revised scoring scheme.
- (9) Notes for editing.

From these data the revised schedule was drawn up. The points of score of the questions dropped were redistributed proportionally among those retained to keep their relative weighting as previously determined by the judges. The questions were regrouped into six sections, five on hygiene and one on vital statistics. The regrouping was such as to equalize the points for each section at 200 apiece. Minor adjustments within a question of the points allotted to each answer were made to fit the range of answers discovered in the graphs. For example, the finding that some families slept five and six in a bed (or under one quilt) required that the formula be modified in order to discriminate between such families and those that slept only three or four to a bed !

Simplified scoring rules, to be applied without exceptions, were evolved. (See exhibit of Form B). The principle of interpolation was introduced to enable completing a schedule where some part (if less than one fourth) was missing. For example, in childless families, often the section dealing with infant hygiene could not be filled out. Rather than penalize the family for sterility, or recency of marriage, some hypothetical score had to be assigned for the missing part. Crediting the average score of the village for that part was tried. This disturbed the village mean least but it did not discriminate as finely between families. Crediting a proportion of the missing part, equal to the proportion earned by that family on the part filled out, was next tried. This was adopted as a high correlation of over .70 was found on the average between sections. This justified the interpolating of a part missing based on the part existing. The formula in general is :

$$PU + A = C \quad \text{where } P = \text{the proportion of the earned score to the maximum score on the questions that were asked.}$$

U = the maximum score of the questions unasked.
 A = the earned score, on questions asked.
 C = the corrected score after interpolation.

If T = the total maximum score on all questions, asked and unasked, then the above simplifies as follows :

$$\frac{A \cdot U}{T - U} + A = \frac{AU}{T - U} + \frac{AT - AU}{T - U} = \frac{AT}{T - U} - C$$

When a question or two is to be interpolated within a section, T is the maximum section score of 200 points, and the formula becomes, $\frac{200A}{200-U} = C$. (See foot of each scoring-form page of Form B). When a section is to be interpolated from the rest of the scale, T is the maximum scale score of 1000 points, and the formula becomes, $\frac{1000A}{1000-U} = C$. (For example, see foot of Section III, the Infant Hygiene page, Form B.)

Form B was then printed with a statement of its purpose, method of construction, and directions. It was designed to be spread open in the middle when filed. In this position all the scores and identification data are visible simultaneously, by reason of the "shingled" pages. All statistical analyses are thus facilitated. An exhibit of Form B follows.

HYGIENE SCALE FOR FAMILIES

In Syrian Villages

(Form B)

by

Stuart C. Dodd, Ph. D.

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Department of Sociology
 American University of Beirut
 Syria
 1933

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Notes: (All notes should be cross-referenced, i. e. head the note with number of the question (if any) on which it bears, and write "See note §" after that question in the margin).

PURPOSE OF THE SCALE

1. MEASUREMENT OF HYGIENIC STATUS. This scale comprises a questionnaire and a scoring form for appraising the answers. A family answering the questionnaire earns a *score* which measures its general hygienic status. The average scores of different villages, or any samples of population, may be compared as indicating "better" or "worse" hygienic practices in general.

This scale does not measure health, but only those habits, practices, and conditions which are under the control of the family and which are considered to be factors in maintaining physical health. It is intended for Syrian villages but may also be used in neighboring countries with similar conditions. It will also measure the status of urban families, though less satisfactorily. It is intended for a survey, or house-to-house canvass, by persons who need not be medically trained.

2. MEASUREMENT OF HYGIENIC PROGRESS. A second score from a resurvey after a year or two tells whether there has been any change and measures its amount and rate (within limits of the probable error). Such a change in a socially desired direction indicates *progress*.

3. MEASUREMENT OF SOCIAL FORCES. To measure social forces requires defining them first. The *momentum* of any social movement (as, here, towards better hygiene) is proportional to the rate of progress and to the population whose inertia has been overcome. Whatever increases the momentum of such a social movement may be called a *social force*. This may be defined as the rate of increase of momentum in a population. By finding the increase of momentum in a period it is possible to learn the net effect of the social forces that have produced this progress in a population in spite of whatever resisting forces there may have been.

These principles, when expressed in formulae, become:

Basic Units:	Social phenomena measured:
S = average <i>score</i> of a population, as on this hygiene scale	Amount of progress = $C - S_{11} - S_1$
Y = time interval in <i>years</i> between two measurements.	Rate of progress. = $R = C \div Y_{11.1}$
P = size of <i>population</i> surveyed	Momentum of progress = $M = RP$
	Social force = $F = \frac{(R_2 - R_1)P}{Y_{2.1}}$ producing progress

For example, this scale was developed for a controlled experiment. Villages were equated on the basis of their hygiene scores from a survey, and on other criteria, into experimental and control villages. By remeasurement after two years, the effectiveness of the social force (in the form of a travelling clinic of the Near East Foundation) in the experimental villages is being appraised (in part).

4. EDUCATION IN HYGIENE. The scale may serve as a systematic guide to interviewing families in order to diagnose the weak points in their hygienic practises and give appropriate instruction.

5. RESEARCH. This scale is offered for the professional use of any government or private agencies in the Near East, in order that it may be revised from their experience and made a more useful instrument with which to work upon problems of health and hygiene in the region. Suggestions for improvement are invited.

INSTRUCTIONS FOR THE SURVEY DIRECTOR

1. **TRAINING AND SELECTING OF SURVEYORS.** Surveyors, preferably of both sexes, should be chosen who can mingle acceptably with the village people and win their confidence. They should also be individuals who can be trusted to fill out the schedule conscientiously. They should practise filling out schedules simultaneously in a group from the answers of one person and then compare their records and eliminate sources of variation amongst them. Until thoroughly familiar with the schedule so that it is largely memorized, they should go in teams of two, one to record and the other to ask questions. After practice, a surveyor, working alone, averages ten schedules in a seven hour day.
2. **OFFICIAL CONTACTS.** The surveyors should secure the approval of the appropriate government official in the Health Department or Administration and, often, of the landlord. The interest of the Mukhtar and the head men should be secured. If the surveying group is introduced by a well known doctor, imam, or person of influence, it often helps.
3. **MEDICAL ASSISTANCE.** It is well to have a doctor and a nurse in the survey party and hold a clinic before the survey starts. The first filling out of schedules can be done on cases who come to the clinic for definite sickness, and then spread from them to all the houses of the village. If some free medicines or cakes of soap are given out, this clinic wins friendly response and ensures that the survey is believed by the people to be concerned with health and not with the revenues of the government or the landlord.
4. **PUBLIC MEETINGS.** To get cooperation it is often well to have a meeting of the village with a lantern slide talk, chiefly to entertain and interest them, but also to emphasize the importance of health. A folk dance (debki) or other entertainment is often enjoyed. To further win goodwill in the village, a program of games for the children with candy for prizes, may be carried out. A good speaker should explain to the people the purpose of the survey, getting them to see that if they want more boy babies to live, etc., the causes of sickness must be discovered in their particular village, and for this reason it is necessary to ask a lot of questions before help can be given intelligently.
5. **LISTS.** Before starting the house-to-house canvass, lists of householders should be secured from the mukhtar or government, or a well informed elder. Often it is well to go from house to house with the mukhtar, numbering the doors and making a rough sketch map to ensure that the surveyors do not miss any family.
6. **SUPERVISION.** The director of the survey should check all schedules as to completeness and form of filling out before the party leaves the village. (Usually, this is best done before the surveyor's second visit to a family). He should constantly go with surveyors to inspect samples of their procedure. He should hold informal discussions with them while the work is in progress to rule on unusual answers to items, to compare experience in handling people, and to work up the interest of the surveyors in the scientific as well as in the human problems met.

INSTRUCTIONS FOR THE INDIVIDUAL SURVEYOR

1. **ACCURACY.** The surveyor should realize that for scientific work a much higher degree of accuracy is required than one ordinarily thinks necessary. It is of utmost importance that every question in the scale be asked (tho not necessarily verbatim as printed), and that the rules for recording and scoring be followed in rigorous detail.
2. **CONFIDENCE OF THE INFORMANT.** It is essential to make friendly contact with the informant before attempting to fill out the schedule. Take time to exchange compliments and talk about topics of interest to them. Dress in simple and rough clothing, use colloquial language, and coach up on local terms for diseases, etc. In questioning follow a conversation procedure as far as possible, skipping around the schedule if necessary. It is usually well to begin on their sickness record and on the Remedies section, or with women on the Infants section, or with men on crops and the Food section. It often scares them if one begins on Section I, listing names and ages. The surveyor may reassure the villager in response to his question "What are these questions for?" by pointing out relations between all the more obvious questions and definite sickness (but only after the question has been answered!). The paper and pencil should be in one's pocket on entering, and throughout kept as inconspicuous as possible. Care should be taken to see that the informants are left with a friendly feeling and that no resentment or suspicion grows.
3. **FAVORABLE CONDITIONS.** It is best to fill out the schedule in two visits. In the first, fill out most of it. Before the second visit, check it over carefully and note on the back all gaps and interesting points to follow up further. The second visit should also take a second sample and average the score of items showing a variation from day to day, such as the menu (\$40), conditions of the yard (\$77), etc. Interview the informant alone, wherever possible. Discourage the neighbors from assembling. In any case, record only the replies given by members of the family.
4. **MEASUREMENT VS EDUCATION.** Do not mix measurement with education. For education the scale may be used as aid in diagnosing and correcting the weak points in the family's hygiene. But for purposes of scientific measurement of their hygienic status, no instruction should be given. The measurer should never disapprove of any answer to any question, nor try to preach or teach. His function is to get information and record it, with only such approval and encouragement of a general sort as is necessary to keep his informant communicative. Notes should be taken, so that after the measuring is finished any educational purpose may then be carried out.
5. **SUBSIDIARY QUESTIONING.** The question as printed on the schedule page is only an opener. It will have to be followed up by many subsidiary questions as called for by the particular interview, in order to get a complete answer or to insure correct understanding of the main question. To avoid asking leading questions which suggest their own answers it is well to offer a choice of alternatives, e.g. Do flies breed in manure, or in mud, or in crevices?
6. **CHECKING.** Ideally information should be checked by securing it independently from two members of the family, perhaps from the mother at home, or the father away from home. Wherever the condition or practise enquired into can be observed by the surveyor personally, he should not depend upon a verbal answer. He should inspect in person the living room and kitchen, W.C., and yard of the house, and ask to see all equipment or have demonstrated such practices as are possible.

Section II REMEDIES FOR SICKNESS — Scoring Form

II Max
Score

- () 40. *22. MALARIA
Take quinine 10 () Daily dose of 12 to 23 grains or between .8 and 1.5 grams 10 ()
Kept up, 2 points per week up to five weeks 10 ()
Take plasmoquine or atabrin as per doctor 30 ()
Rest in bed 2 () Use a bed net 1 ()
See a doctor 3 () Know mosquito is the carrier 4 ()
- () 40. *23. DIARRHEA
Take a doctor's medicine or injection 20 ()
Take a purge 8 () See a doctor 6 ()
Eat leban 4 () Rest in bed 2 ()
Drink rice water 3 () Starve 4 ()
Know diet as the carrier 8 ()
- () 20. *24. SMALLPOX
Isolate patient 3 () See a doctor 2 ()
Rest in bed 2 () Know contact as carrier 8 ()
Vaccinated 5 () 6—() years ago=Score 5 ()
- () 20. 25. TYPHOID
Isolate patient 2 () See a doctor 3 ()
Use a thermometer 1 () Know diet as source 4 ()
Innoculated 5 () 6—2 () years ago=Score 5 ()
- () 30. 26. COLDS, etc.
See a doctor 3 () Take aspirin or 5 ()
Disinfect nose or throat 7 () doctor's medicine
Perspiration bath 1 () Hot drinks 1 ()
Individual handkerchief 1 () Go to bed 2 ()
Indiv. spoons 1, briq 1, cups, 1, 3 () Isolate patient 3 ()
Know sources: Sneezing 1 () Sharing kerchiefs 1 ()
Coughing 1 () „ spoons, etc. 1 ()
Kissing 1 () Bed mates 1 ()
- () 20. 27. MEASLES
Isolate the patient 5 () Get a doctor 5 ()
Rest in bed 4 () Eat leban 3 ()
Drink soup, soft diet 6 () Hot bath or steaming 1 ()
- () 20. 28. SORE EYES
Use doctor's eye drops 5 () Days per week=score, 7 ()
See a doctor 2 () Indiv. towel & kerchief 3 ()
Protect with glasses 1 () Know communicability 3 ()
- () 10. 29. CUTS
Apply antiseptic 6 () Sterile dressing 2 () Ashes 2 ()
Apply an aseptic: olive oil () salt () soot ()
urine () kerosene () dibs () Any one 1 ()
Suck it 1 () Wash with soap and water 2 ()

() U — Maximum score of questions unanswered
() A — Total score of questions answered

() S. — Corrected Section Score = $\frac{200A}{200-U}$ () Maximum = 200

REMEDIES FOR SICKNESS — Schedule

- *22. a. "What do you do to stop malaria?" b. "Anything more?"
Take hot drinks () Pray to Allah () Do nothing ()
Use a charm () Starve () Take purge ()
- *23. a. "If you have diarrhea, what do you do?" b. "Anything else?"
(Include any loose movements, also blood, or mucous).
Use a charm () Prayer () Do nothing ()
Drink liquor () Take hot drinks ()
Drink pomegranate juice ()
c. "What causes diarrhea?"
- *24. a. "What do you do for smallpox?"
Charm () Pray to Allah () Do nothing ()
Hot drinks () Liquor () Medicine ()
b. "Have you been vaccinated?" "How many of the family have been vaccinated?" Make + if some but not all have ever been vaccinated. If +, c. "How long ago?" Average the number of years of those vaccinated for completing the scoring formula.
25. a. "What do you do in case of typhoid?"
Make sure that typhoid is understood. Often a laconic reply requires further questioning as
b. "If he doesn't get better, what else would you do?"
c. "What does typhoid come from?"
d. "Are you inoculated?" If +.
e. "How long ago?" Substitute the average periods for all those inoculated in the scoring formula.
26. a. "What do you do for a cold, (grip, 'flu', etc)?"
b. "If that is no good, what else would you try?"
Charm () Prayer () Do nothing ()
Liquor () Cupping () Soak feet in heat ()
Rub chest () Hot water bottle or equivalent ()
27. "What do you do for measles?"
Use ointments () Bleeding () Wear red clothes ()
Eat sweets ()
- *28. a. "What would you do for sore eyes?" (trachoma, etc.)
If drops are used, b. "How often do you put them in?"
Charm () Prayer () Do nothing ()
Use: Koehl () Riham powder () Ointment ()
Wipe on clothing ()
c. "What causes sore eyes?" Credit if they know that sore eyes are often, tho not always, communicable. "Glasses" means not an oculist's prescription but any dark or colorless glasses for protection from extreme wind, dust and chaff at harvest, or strong sunlight.
The use of head kerchief, clothing, or fingers does not get credit as an "Individual handkerchief."
29. a. "What do you put on a cut or wound?"
b. "Anything else?"
Charm () Ointment () Unboiled water ()
Rags () Cobwebs () Leather scrapings ()
(The answers recorded on this Schedule page are not scored).

Section III INFANT HYGIENE — Scoring Form

III Max.
Score

- () 15. *30. NETS. Sleeps under net = 15, \pm = 7
Credit in full (15 points) if in winter with no insects about,
and netting is shown to surveyor for use when there are insects.
- () 100 *31. FOOD. If there are two babies under 24
months, average their scores:
- | | Over 1 yr. | Under 1 yr. |
|--------------------------------------------------|------------|-------------|
| a. Human milk, daily | 5 () | 60 () |
| b. Animal milk or leban, daily | 10 () | 15 () |
| c. Tinned milk daily | 5 () | 15 () |
| d. Boiled | 10 () | 25 () |
| e. Water daily | 10 () | 2 () |
| Boiled | 5 () | 6 () |
| f. Tomatoes, oranges, grapes,
greens, any one | 20 () | 8 () |
| g. Butter, eggs, cod liver oil | 20 () | 16 () |
| h. Cereals or soaked bread | 20 () | 8 () |
| i. Adult diet | 5 () | 0 () |
| Total | () | () |
- () 15. 32. UTENSILS boiled.
- () 10. 33. REGULAR HOURS. (Answer for youngest).
- () 10. 34. DIAPER sand or earth 8 () Cloth diaper 10 ()
Pipe fitted to urethra 3 () Rubber 0 ()
Pot under hole in mattress 5 ()
- () 10. 35. CHANGING, 1 point per time in last 24 hrs.
- () 12. 36. WASHING: Hot water 5 () Soap 4 () Sunlight 3 ()
- () 14. 37. BATHS. Score = Number of baths in past 14 days.
- () 7. 38. DEGASSING.
- () 7. 39. SUNBATHS. Score = number of baths in past seven days.

() = U Maximum score of questions unanswered
() = A Total score of questions answered

() S_{II} = Corrected Section Score = $\frac{200A}{200-U}$ ()
Maximum = 200

= Interpolated Section Score. If no score can be secured
for Section III, interpolate a score calculated as $1/4$ of
the total corrected scores of the other four sections.

() S_{III}

Section III. INFANT HYGIENE — Schedule

Infants mean children 24 months, or less, of age.
In case there is no infant in the family, change
the questions from the present to the past
tense (if there are older children) or to the
future conditional as "What would you do, if"—
etc. (if there are no children). Ask as for a
baby at the age of 6 months. If the informant
will not reply carefully to such an unreal sit-
uation, omit this section and interpolate a
section score.

- *30. "With what is the baby covered? May I see?"
The surveyor should verify all these practices
by asking to see the equipment wherever possible.
- *31. a. "What is the baby fed?" Check \pm and cut score
in half (dropping fractional remainders) if
these practices are not *daily* but only
"usually", "often", "sometimes", "If we have it",
etc. Check a, b and c \pm if two of them are used,
supplementing each other.
- d. If animal milk is used, "Does the baby drink
the milk raw as you get it from the animal,
or do you prepare it in some way?"
- e. "Do you give it water?" "How often?" "Is it
boiled?"
- f. "Do you give it greens or the juice of toma-
toes, or oranges or grapes?" "Daily?"
- g. "Do you give it butter? Eggs? or cod liver
oil?" "Daily?"
- h. "Do you give it cereals or bread softened in
milk or water?"
- i. "Does the baby eat a little of almost every-
thing that you eat?"
32. "Do you boil the baby's bottle (spoon or cup)
before using?"
33. "When do you feed the baby? When he cries for it?"
34. "What do you put around the baby so he won't
dirty his clothes?" "Cloth" means cloth next to the skin
with no earth between. If more than one method
is used check all used \pm
35. "How often have you changed it in the last 24
hours?"
36. "With what do you clean the diapers? Hot water?
Soap? Sunlight?"
37. "How often do you bathe the baby? When was it
bathed last?"
38. "Do you hold the baby up and pat his back till
he belches a little air after *every* feeding?"
39. "Do you ever let the sun shine on the baby
naked for a few minutes?" "How many times
last week?"

Section I. IDENTIFICATION DATA & VITAL STATISTICS

- *1. "What is the full name of the head of the family?"
Note any supplementary or alternative names.
- *2. "What is the name of the village. Note that all Arabic names should be recorded in standard transliteration to English letters. When in doubt, record it in Arabic script also.
3. What is the government administrative district?
- 4 1st visit: Name of _____ Questioner _____
recorder _____ or interpreter _____
5. 1st visit: Hour _____ Day _____ Month _____ 19 _____
6. & 9 "What is your name?"
7. 2nd visit: Name of _____ Questioner _____
recorder _____ or interpreter _____
8. 2nd visit: Hour _____ Day _____ Month _____ 19 _____

SICKNESS RECORD OF FAMILY

12. Days in bed: during past _____ month : 12 months :	13. Informant's diagnosis :	14. Doctor's Letter diagnosis : identify (if available): ing indiv.
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

10. "Who are the persons living in this house?" Always list names in this order: Male head (note if dead) his first wife and her children: his other wives each followed by their children, then grandparents, brothers, sisters, in-laws, and other relatives, then domestics, then guests. Inquire carefully to get complete list of names of the household including any hired men, servants, relatives or guests who have slept and eaten there for the past month.
11. Check + for males: — for females.
12. How many days did he (she) spend in bed with sickness last month? In all the past year?
13. "What was the sickness?" 14. "Did you have a doctor?" etc.
15. "How old is he? (she)?" Ages are essential only for infants up to 24 months of age and should be recorded in months as fractions of a year, 7/12, etc. Other ages may be omitted if informant is suspicious.
16. "What is the work of ... ?" (omit housewives).
- *17. "Has anyone died in this household in the past 24 months?"
18. "How old was he when he died?" (Infants ages in 1/12's).
19. "What was the cause of his (her) death?" b. "Were any born dead?"
- *20. a. "How many babies has ... (1st wife) had in her lifetime?" (include stillbirths and any deliveries after 6 months term; exclude abortions or miscarriages before 6 months).
- *21. "How many of her (your) children died at any time since birth and up to 21 years of age?"
Ask similarly for any other wives.

Family number.

IDENTIFICATION AND
VITAL STATISTICS

- *1. Family name _____
- *2. Village _____
3. Region _____
6. 1st informant _____
9. 2nd informant _____

10 Names of family	11 Sex Male ?	15 Age	16 Occupa- tion of bread- winners
A	_____	_____	_____
B	_____	_____	_____
C	_____	_____	_____
D	_____	_____	_____
E	_____	_____	_____
F	_____	_____	_____
G	_____	_____	_____
H	_____	_____	_____
I	_____	_____	_____
J	_____	_____	_____
K	_____	_____	_____
L	_____	_____	_____

- *17. Number of deaths () 19. Cause of death
19. Ages at death a _____
() () () b _____
c _____

- *20. Births: 1st wife _____ 2nd _____ 3rd _____
- *21. Minors dying: 1st wife _____ 2nd _____ 3rd _____

Total of 5 (corrected) Section Scores
is the Scale Score, S

S = ()

Section IV. FOOD AND CLEANLINESS — Schedule

*40. "What did you have to eat for your last meal?" Ask completely for 48 hours even to minor items of butter, sugar, olives, cheese, etc.

*41. "Do you ever drink milk raw (unboiled)?"

*42. "During last winter when the rains were just beginning, what kind of vegetables and fruits did you have to eat in your family?" Count only items actually eaten last winter. Eliminate items a) available in winter or, b) eaten in summer. If necessary follow up gaps with: "Did you eat any last winter?" avoid leading questions such as "You don't have any...do you?" Items in the 2nd column and lower half of the 3rd column are more rare. If it has been ascertained that none of these items are found in the village, they need not be asked for in detail.

*43. For items in column three: "Where do you get from?" If they came from a market or some source where others outside the family have handled them, ask "When you eat raw, do you wash (or peel) them or do you eat them just as they grow?"

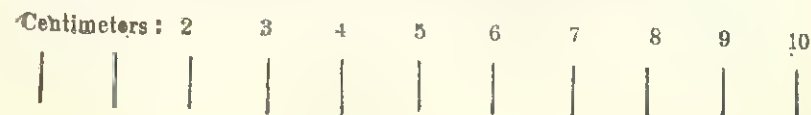
*44. "How much water do you get daily for all purposes?" How much in midsummer (July)? Ask to see the jar or receptacle and find out its volume. A tanaki used as a pail holds 15 liters. Include infants as persons.

*45. a. "Where do you get drinking water from?"
b. "Is it from the same source all the year?"

*46. The surveyor should visit the source and verify the informant's replies to:
Is there a W.C. or stable within thirty meters of the spring (well, stream, pool)?
Is such a source of possible contamination on the same level or higher up?
What is the nature of the ground between?
Is it easily permeable sand, gravel, or mixed earth and stones, or is it less permeable hard clay or solid rock?
For streams, is there a village upstream?

*47. In case § 46 is answered affirmatively, "Do you boil or filter your drinking water?" If filtered, ask to see the filter.

*48. a. "How many cakes of soap do you use up in a month for washing around the house, dishes, clothes, baths, and for everything?" b. "Let me see the size of your cakes?" Measure it on the scale on the edge of this page.



FOOD AND CLEANLINESS — Scoring Form

				Max. IV Score
				40 ()
*40. MENU.		1st day	2nd day	
Cereals, bread		5 ()	5 ()	
Milk, milk products		5 ()	5 ()	
Vegetables, fruits		4 ()	4 ()	
Meat, fish, eggs, nuts		3 ()	3 ()	
Fats (olives), sugars		3 ()	3 ()	
*41. BOILED MILK.		() + = 20. ± = 10		20 ()
*42. VEGETABLES IN WINTER		1 point per item		25 ()
*43. CLEANLINESS.		1 point per item cleaned.		15 ()
Bananas ()	Artichoke ()	Apricots ()	()	
Beans... ()	Asparagus ()	Dates ()	()	
„ string ()	Beets ()	Figs ()	()	
Cabbages ()	Cactus fruit.. ()	Olives ()	()	
Carrots ()	Cauliflower ()	Grapes ()	()	
Eggplant ()	Karob ()	Cucumbers ()	()	
Garlic... ()	Leeks ()	Lettuce ()	()	
Grapeleaf ()	Lemons ()	Radishes ()	()	
Greens ()	Limes ()	Tomatoes ()	()	
Lentils ()	Parsnip ()	Acidunias ()	()	
Oranges.. ()	Pomegranite ()	Apples ()	()	
Ochres ()	Sweet potato ()	Cherries ()	()	
Onions ()	Pumpkins ()	Mulberries ()	()	
Peas ()	Quinces ()	Peaches ()	()	
Peppers ()	Turnips ()	Pears ()	()	
Potatoes ()	Muskmelon ()	Plums ()	()	
Squash ()	Water melon ()	Celery ()	()	
		Berries ()	()	
*44. AMOUNT OF WATER.		1/2 point per person-liter		30 ()
Number of receptacles		No. of persons		
daily in July		in family		
Liters in each		Liters per day		
Liters per day		per person		
*45. SOURCE.		Covered	Open	
Spring		Cistern	Well	Stream
Summer 50 ? ()	40 ()	50 ? ()	50 ? ()	0 ()
Winter 50 ? ()	40 ()	50 ? ()	50 ? ()	0 ()
If § 46 is negative, answers marked 50 ? get 50 points ;				
if § 46 is positive, the score for § 45, 46, 47 together				
is given by § 47. a + gets half credit.				
*46. EXPOSURE to contamination.				
W.C. in 30 meters () Level or higher ()				
Permeable Ground () Village upstream ()				
*47. PURIFYING. Boiled 50 () Filtered 20 () § 45-47: 50 ()				
Average summer and winter, if different.				
*48. SOAP. Score = annual liters per person times 2. 20 ()				
Length _____ cms. Width _____ Height _____ Vol. _____ cu. cms.				
Number of cakes per month _____ × 12 = _____ Annual.				
or per week _____ × 52 = _____ cakes				
Cu. cms. × cakes annually ÷ 1000 = _____ liters annually				
Persons in household (See § 75) _____				
Liters annually per person _____				
Maximum score of questions unanswered () = U				
Total score of questions answered () = A				
Corrected Section Score = $\frac{200A}{200-U} = \frac{()}{()}$ See = ()				
(Maximum = 200)				

Section V. INSECTS — Schedule

49. a. "Is there ever malaria here?" b. "Any mosquitoes?"
50. a. "How do you protect yourselves from them?"
If necessary: b. "To escape them do you go and sleep elsewhere?" c. "Go to bed at dusk?" d. "Cover up your face with bedclothes?" e. Make the fire smoke up the room?" f. "Use a sprayer?" If +, inspect it!
If no mosquitoes and no malaria have existed for five years within twenty kilometers, omit § 49–54 and interpolate a score; if they have existed within those limits, ask for their knowledge rather than practice—"What would you do, if necessary", etc.
51. a. "Do you sleep under nets?" b. "Will you show them to me?" c. "Do you use them every night in summer or only occasionally?" d. "How many persons are covered?"
52. "Where do mosquitoes breed?" "identified" means definite spots described or shown.
53. If no breeding places can be found by surveyor (or informant) change No. 54 to a question of knowledge "If necessary, how could you prevent mosquitoes?" etc.
- *54. "Have you tried to prevent mosquitoes from breeding?" Check claims of measures taken by inspecting the spots.
55. a. "Do you have many flies here in summer?" b. "How do you protect yourselves from them?" If no fly nuisance exists (Check by personal inspection, neighbor's reports etc.) change the question to "How would you get rid of them, if they were numerous?" Inspect all equipment claimed.
56. "Where do you put your vegetable peels, etc., while preparing a meal before you dispose of them permanently?"
- *57. "In what do you keep your food between meals? Will you show me?" Look for dirt, garbage, or food exposed to flies.
- *58. "Where do flies breed?" In what other kinds of places?"
- *59. a. "What harm do they do?" b. "How do they do it?" "Anything else?" The spontaneous answers will vary in form. Check + after each point listed opposite, if it is stated clearly: check ± if it is stated vaguely, or only implied.
60. a. "Do you have many fleas here in summer?" b. "What do you do to get rid of them?" c. "What else do you do?" d. "What do other people do?" Try to get all they know without suggesting any answers. "Earth-wash" (opposite) means, do they paint the floor and walls with a red-earth wash, or calcimine, etc.?" "Separate animals" means do they separate animal and human quarters all the year. Summer only=±.
61. "Where do fleas breed?" "In what kinds of places?"
62. "If lice should be found on anyone's head, what would you do to get rid of them?" Indirect questioning here is more likely to get truthful answers than in the case of mosquitoes (for which no shame is felt). "If that didn't get rid of them all, what else would you try?"
63. "If any bedbugs are found, what do you do to get rid of them?" "If that didn't work what else would you try?"

INSECTS — Scoring form

	Max. V Score
49. Alleged malaria () Alleged mosquitoes ()	
50. MOSQUITO AVOIDANCE. Sleep elsewhere 3 () Cover up 1 () Smoke 3 () Spray 3 () Max. Score for § 50+§ 51 is 20.	20 ()
*51. NETS: Persons covered _____ Percent covered _____ Number in household _____ Score = % × 20 = ()	
52. KNOWLEDGE. "On water surface" 6 () Identified 10 ()	10 ()
53. BREEDING PLACES: On family's () In the () properties Village	
*54. MOSQUITO PREVENTION. a. Stocked pools with fish " 5 () " 5 () b. Drained, or filled them " 5 () " 5 () c. Covered, or screened them " 5 () " 5 () d. Oiled, or dusted with poison " 5 () " 5 ()	40 ()
55. FLIES: Alleged present () Swatters 10 () Flypaper 10 () Traps 10 () Poison 10 ()	30 ()
56. GARBAGE, etc, covered	5 ()
*57. FOOD, covered	5 ()
*58. KNOW—Human feces 3 () Manure 3 () Carcasses 3 () LEDGE Garbage 3 () Other decaying matter 3 ()	15 ()
*59. KNOWLEDGE OF HARM. Carry diseases 8 () especially to infants 1 () from feces, etc 2 () to food 2 () or from diseased skin and eyes to healthy ones 2 ()	15 ()
60. FLEAS. Alleged present () Kerosene on floors 10 () Poison powders 2 () Chemical sprayer 2 () Smoke the room up 1 () Sun clothes, etc. 1 () Earth wash 4 () Separate animals 3 () Live in booths outdoors 2 ()	15 ()
61. KNOWLEDGE OF BREEDING In dirty 2 (), sunless 2 (), animal or human living quarters 1 ()	5 ()
62. LICE. Haircutting 5 () Hair combing 3 () Kerosene 10 () Hot baths & laundering 2 () Chemical delousing 20 ()	20 ()
63. BEDBUGS. Fumigation 20 () Smoke from hearth 2 () Sunning clothes 2 () Insect powders 3 () Chemical sprays 8 () Boiling water into cracks 10 () Kerosene into cracks. 15 ()	20 ()
Maximum score of questions unanswered (=U	
Total score of questions answered () =A	

$$\text{Corrected section score} = \frac{200A}{200-U} = \frac{()}{()} = S_v ()$$

(Maximum = 200)

Section VI.

HOUSING — Schedule

- *64. "Where do you throw your garbage?" Inspect the place!
65. "Where do you go for W.C. purposes?"
If sometimes one method and sometimes another is used, average their scores. If the garbage is first put in an open container and later removed to the fields, average credits of both methods. Check as Buried only if buried when deposited: otherwise as in Open Container.
66. If W.C. exists: a. "How many people use it every day?"
b. "How deep is the hole or pit?"
c. "Is the W.C. inside the house, or attached with its entrance outdoors, or an outhouse?"
d. "Is the hole inside covered and flyproof?"
e. "Is the pit built up flyproof on the outside?"
f. "Are there flies buzzing around?"
If the hour is a cold, damp or dark one, look for flies on wall, ceiling, or cracks. In winter, interpolate.
g. "Is there visible filth or pronounced odor of it?"
h. "What flushing or covering material is used?"
i. "What personal cleanser is provided?"
- *67. a. "Where do you keep the animals at night in cold weather?"
Count a stable which opens into a living room as +.
b. "Do chickens ever come in here?" Look for droppings, etc.
- *68. With what material is the living room floor covered?
If less than half the area is covered, check -.
69. "How many rooms are there in the house?" "Will you show me around?" Measure in meters with the tape, string, or marked stick. Depend on estimation, or pacing, only after practice has trained the surveyor to reach the standard of fifty such estimates with *not one* error over 10%.
70. a. What is the percent of the total area of windows and doors (to outdoors) in both rooms that have wire screens?
b. What percent has glass panes?
c. What percent is protected by shutters?
71. a. "Do you rent this house or do you own it?" b. "Is it mortgaged?" Often the surveyor can ask about debts and secure data on the interrelation of economic status and hygiene.
72. In the living room, is there: a. Cobwebbing anywhere?
b. Offensive odor on entering? c. Soot on walls or ceiling?
d. Unswept litter on floor or in corners?
73. Is there a stove? A brazier? A hearth? A chimney?
74. a. "What is the fuel?" If dung b. "Is it gathered by the family or bought already made up into cakes?"
75. "How many persons sleep in the house?" Check this answer with the number of names of the family and household in Section I and correct any discrepancies.
- *76. "How many beds have you?" A bed means a bedstead; or, if none, a mattress on floor or platform; or, if no mattresses exist, consider as in one bed all who sleep under one cover (lehaf) in winter.
77. Observe the yard, especially secluded corners at the sides or behind the house. If not defined by the next house or a wall, consider the yard a zone of 10 meters width around the house, or halfway to the next house, whichever is less. Dung cakes plastered against the wall, even tho dry, should count as fresh manure. Cakes dried elsewhere and stored in the yard do not count as fly-drawing manure.

HOUSING — Scoring Form

Max. VI
Score
25 ()

- *64. GARBAGE
- | In Street or yard | In Garden or field | Container | In Stream or water | In Stable or fed to animals | Buried | Burned |
|-------------------|--------------------|-----------|--------------------|-----------------------------|--------|--------|
| 0 () | 5 () | 0 () | 15 () | 5 () | 20 () | 25 () |
- *65. DEFECACTION (See definition of yard in § 77)
0 () 5 () 0 () See § 66 5 () 5 () 20 ()
66. W.C. () Maximum score for § 65 or § 66 combined is 75
- a. Number of users _____ Score = 11 - number using 10 ()
b. Depth in meters _____ 1 point per meter up to 5 5 ()
c. W.C. inside house 5 () Attached 2 ()
d. Flyproof inside 10 () e. Flyproof outside 10 ()
f. Flies absent 10 () (As always \pm = 1/2 score) g. Clean 5 ()
h. Covering material: Flushing 20 () Phenol 10 () Water 3 ()
Ashes or lime 8 () Earth 5 () Other 1 () Nothing 0 ()
i. Cleanser: Paper 5 () Water 3 () Cloth 1 ()
Grass or twigs 2 () Nothing provided 0 ()
- *67. ANIMALS always sleep outside the family living room 10 ()
- b. Chickens never enter 5 ()
- *68. FLOORING of living room: Mud 0 () Stone 3 () Concrete 5 ()
Tiles 8 () Wood 3 () Paint, matting, carpets, skins, or rugs 2 ()
69. LIGHT. Score = 100 \times average area ratio 20 ()
- | a. Number of rooms in house used as living room, kitchen, bedroom, or dining room is: | Area ratios |
|---------------------------------------------------------------------------------------|-------------|
| b. Living: Number of windows _____ Total Area _____ sq.m. b/c = _____ | |
| c. room: Floor Width _____ Length _____ Area _____ sq.m. d/e = _____ | |
| d. Kitchen: Number of windows _____ Total Area _____ sq.m. Average = _____ | |
| e. Floor Width _____ Length _____ Area _____ sq.m. age = _____ | |
70. WINDOW covering. Score = % \times maximum score 15 ()
% screened _____ 10 () % glassed _____ 3 () % shuttered _____ 2 ()
71. HOUSE: Owned () Rented () Mortgaged () Debt: L.S. _____
72. CLEANLINESS. (Enter scores, not \pm marks) 4 ()
No cobwebs 1 () No odor 1 () No soot 1 () No litter 1 ()
73. HEAT: Stove 3 () Brazier 1 () Hearth 1 () Chimney 1 () 3 ()
74. FUEL: Charcoal 3 () Kerosene 8 () Sticks, brush 4 () 8 ()
Wood 6 () Dung: Home made 0 () Bought 3 ()
75. CROWDING. 6 - ratio = score (drop fractions!) 5 ()
Number of sleepers _____ Ratio = Sleepers \div rooms (§ 69a) = _____
- *76. BEDS, number 10 ()
Score = 10 \times number of beds _____ - 2 = 10 \times _____ - 2 = _____
number of sleepers (§ 75)
77. YARD: Paved 1 () Fenced 1 () No human feces 2 () No dung 2 () 10 ()
No animal feces. 2 () No decay 2 ()
(Write the score earned in the parenthesis (e.g. if no decaying matter exists write 2 (2), as checking a negatively worded item with + mark may be confusing)

Maximum score of questions unanswered () = U
Total score of questions answered () = A

Corrected Section Score = $\frac{200A}{200-U} = \frac{()}{()}$
(Maximum = 200)

= ()

SCORING RULES

1. **SYMBOLS.** A + in a parenthesis means "Yes", an affirmative answer, (i.e. the condition exists, or the act is practised). It earns the maximum score. A — means "No", a negative answer, and is credited with a zero score. A ± means "Yes and No", i.e., the condition or practise exists partially, sometimes, or in a form only approximating that specified in the question. It earns one half of the maximum score.
2. **MAXIMA.** Numbers beside a parenthesis indicate the maximum score for that question or section. Discard any points earned in excess of this maximum. The maximum score for each section is 200, and for the scale, 1000 points.
3. **MINIMA.** There are no negative numbers in this scale. Unhygienic practises are given zero values, while neutral practises are given values between zero and the maximum. Therefore all deduction of points stops at zero.
4. **FRACTIONS.** Discard *all* fractional points in the final score of a question, however large the fraction. The probable error of measurement in this scale of 1000 points does not warrant refinement to fractional points. Retain fractions in the calculation until the score is determined. Example, question § 30 : "What do you take for a cold?" Answer : "Aspirin, if we have any" Mark ± in the parenthesis and score half of five, dropping fractions. Final score = 2.
5. **INTERPOLATION.** Due to the impossibility of securing the information for some reason (such as on the Infants Section from an elderly childless couple) a question may have to remain unanswered. To interpolate a score for such, follow the formula at the bottom of each page to get the correct section score. To interpolate an entire section that may be missing see the formula at the foot of page 7.
It is better to consider a section, or the scale, incomplete than to try to complete it by interpolation if the missing part exceeds one quarter of the maximum score. These interpolation formulae credit a missing part with a score proportional to the family's earnings in other parts. This assumption of correlation between parts is based on the finding of an average correlation of .73 between the scale and the ten section scores of Form A in a wide rural urban range. (N = 345).
6. **STATISTICAL INTERPRETATION.** The pages of the Scoring Forms have been "shingled" so that when this leaflet is opened in the middle all the scores are visible, facilitating statistical analyses in distribution curves, correlations, etc. Every survey should compile its own local norms. For comparison it may be briefly stated that in Syrian villages along the Orontes in the Alaouite country the mean Scale score was 285 (N = 100) with a standard deviation of 43 points. A monograph (type written) on Form A can be consulted at the University Library. A monograph for publication is in preparation.

CONSTRUCTION OF THE SCALE

- I. **FORM A.** From a study of hygienic practices in Syrian villages, 270 questions and all their common answers were printed on a schedule card, Form A. Instructions for administering and for assigning scores were prepared (See Department of Sociology Yearbook, American University of Beirut, Vol. III, 1930-31, pp. 249, typewritten MS). A group of experts in medical and social work in the villages allocated 1000 points of score between the ten sections of the scale, and within each section to the individual questions, and within each question to the different possible answers.
- II. **DISTRIBUTION CURVES** This "scale" was given to 350 families comprising 200 Arab villagers near Hama and Baalbec, 50 Armenian villagers, 50 well-to-do "Beirutis" and 50 miscellaneous families in Egypt, Palestine, Iraq, and elsewhere. From a study of 960 frequency distributions of all the answers, compared by villages, items were selected for Form B, and points reallocated to fit the range of answers actually found.
- III. **REVISION, FORM B.** About three quarters of the questions of Form A were eliminated by the following criteria: (a) those which were most seasonally influenced, (b) all those below the average in objectivity rating (two judges independently rated every item as to its dependence on subjective factors in the interviewer or informant), c. the judgment of doctors and other specialists consulted.
The 77 questions selected for Form B were regrouped into 5 sections to make the sum of their scores, as previously determined, approximately equal at 200 points per section.
Form B was filled out from 260 families including 112 who filled out Form A. Distributions of scores of the scale, of the sections, and of answers to individual questions were again graphed by samples.
- IV. **RELIABILITY** The scale was given a second time to fifty families in three villages. Each surveyor filled it out on two different days from two different informants in each family. The reliability correlation coefficient between these two sets of scores was .91 for the Standard Scale and .90 for the Brief Scale.
- V. **VALIDITY** The validity of the scale depends in part upon the judgment of the doctors, nurses, and others who twice selected its items. In part it depends on observed correlations of .76 of the scale score with an index of mortality; of .52 with an index of morbidity; and of .65 with an index of longevity.
A side study on the inter-relation between hygiene and economic income revealed a correlation of .33 between these in one village (N=33), a coefficient of .29 in the well-to-do city sample (N=50), and a coefficient of .84 in the wide range of both combined. This suggests that wealth and hygiene may condition each other to this extent.
- VI. **BRIEF SCALE** A Brief Scale of the 25 most important questions (starred) comprising 500 points of score and not requiring inspection of the house (which is often impossible among Moslems) is provided for less intensive surveys. The Brief Scale correlated with the full standard Scale at .96 (±.007).

D. *Studies on Form B.*

(Part I, D, 1)

1. *Plotting of distributions for comparative samples.*

a. *The samples.* In discussing the data obtained from Form B frequent reference will be made to the different samples of population on which indices are based. These samples were as follows :—

c=Control sample	N=40	"Normal" Alaouite villagers.
e=Experimental sample	N=40	"Instructed" Alaouite villagers.
d=Demonstration sample	N=32	Highly instructed Armenian refugee rural settlement for which no control sample existed.
b=Normal sample	N=60	"Normal" Alaouite villagers making, when combined with c, a sample of 100 families, upon which to base norms.
r=Repetition sample	N=50	Cases from samples c, e, and d (representing the "rural range") from whom scores were derived from a second informant in each family.
m=Miscellaneous sample	N=34	Miscellaneous cases surveyed for practice, or from other groups, or rejected from the above samples on account of some incompleteness, duplication, or question of identity.

In addition to the above which were surveyed in the first instance with Form B in April, 1933, there were the following samples which had been originally surveyed with Form A in April and again in August, 1931, and whose Form A scores were then transmuted¹² into Form B scores :—

12. The transmuting consisted of copying from Form A schedules onto Form B schedules the items which were retained, then adding up the score of these according to the weighting of the Form B scoring system, and finally filling

- C=Control sample N=40 Refer back to Part I, B, 1, b where the six samples surveyed with Form A are defined. Of the seventy two families in the second sample described there, only forty were still resident in those villages two years later. These forty families constitute the control sample.
- E=Experimental sample N=40 Of the forty six families surveyed in 1931 (sample No. 1 for Form A) only forty were found in 1933 to be resurveyed and defined as the experimental sample.
- D=Demonstration sample N=32 Of the forty six families surveyed with Form A in 1931 (Sample No. 3, Part I, B, 1, b) only thirty two remained for resurveying with Form B in 1933.
- R=Summer sample N=40 The experimental village of Jib Ramli was resurveyed in August of 1931 to study seasonal variation. It was sample No. 6 for Form A. These Form A scores transmuted to Form B are denoted as the R sample (repetition for seasonal error).

gaps (where items in Form B were not contained in equivalent form in Form A) by interpolating the score of the missing items in each section. The interpolation procedure is specified in formulae and discussed in the exhibit of Form B under "Scoring Rules". For a discussion of the error introduced by this transmutation process, see the paragraphs devoted to "Schedule error", Part I, D, 2, f.

U=Urban sample

N=50 The Beirut sample, No. 4 as surveyed in August of 1931 with Form A, had its schedules transmuted to Form B scores and was denoted as the U sample. When this sample was added to the rural samples it constituted the rural-urban range. This was called the "rurbal" range.

Note that in these samples the capital letter is used to denote the transmuted Form B score derived from the 1931 surveys, while the small letter is used to denote the Form B scores of the 1933 surveys.¹³ *All comparisons of data from this point on in this monograph, except where specifically noted, deal with Form B scores only, from either the original or transmuted source.*

b. *Graphs of the frequency distributions.* The data from Form B were tabulated and plotted in two series of graphs. One series is presented in Part II as this deals with the status or scores of families at one point of time. The other series is presented in Part III as this deals with the progress, or change of status, of the samples over a period of time.

In the first series the data from Form B, secured in April, 1933, is presented for the b and c samples with the U sample superposed for comparison. The b and c samples of one hundred Alaouite village families are taken as representing the norms for villages on the plains in the interior of Syria. The U sample of fifty Beirut families represents the other extreme of Syrian society. They are a well-to-do, well-educated sample from the residential quarter of the largest port and capital city of Lebanon.

The rural data, sample (b+c), are presented in a way to combine the visual summarization obtained from a graph with the detailed facts of individual cases obtained from a table. Each family is entered by its family number. Numbers of two

13. The Form A schedules of the Bika' sample, No. 5, were not transmuted to Form B. For full description of all samples see Part II.

digits are used to keep the spacing of the graph uniform (1, 2, etc. = 01, 02, etc.; 100=00). If it should be desired to check any of the calculations here reported or to make any further calculations in studying interrelations of the data the details are available. This arrangement combines the scientific ideal of integrity in reporting observed facts with economy in printing costs. It eliminates the duplication of tables and graphs and the preparation of costly plates by making the graphs such as may be set up in ordinary type by hand or linotype.

The scale scores, the scores of the five sections of the scale, and the data on all the seventy seven questions of Form B are graphed.

In the second series of six graphs the scale scores and five section scores are distributed. Each of these six graphs shows six comparative sub-graphs. The sub-graphs show the data from the control, the experimental, and the demonstration samples aligned side by side. In each of these three samples the data collected in 1931 is shown with the data collected in 1933 superposed to show the changes, if any, which took place during the two year period.

2. Reliability studies.

(Part I, D, 2, a)

a. *Sampling error.* In addition to the completely satisfactory tests for adequacy of sampling that were made on Form A, the two following tests were made on Form B.

Sample b and sample c were compared. As will be seen by reference to their description, these embraced sixty and forty families respectively drawn from a homogeneous culture of Alauite villages of the plain. In some of the villages the families were partly in b and partly in c. In the control villages those cases which had been surveyed two years before were used in the control sample while the remaining cases were put into the b sample. The difference between mean scale scores of the two samples was one per cent of the standard deviation of the difference. It is therefore an utterly insignificant difference. In other words either sample may be taken as an adequate sample of people in that district. Both samples combined may be considered a sample that is reliably adequate in size.

A second test was the comparison between the experimental and the control samples in 1931 when they were both in their natural and uninstructed state. The scale scores of Form B as transmuted from Form A were available. The

difference in these mean scores $E - C = 253 - 241 = 12 = 1.07$ S.D. This difference of slightly over one standard deviation of the difference might occur thirty two times in a hundred by chance and is therefore not significant.

Both of these pairs of samples and three further pairs compared by Form A agree in the finding that the size of samples used was adequate for consistent results.

b. Seasonal error.

(Part I, D, 2, b)

The variation between seasons was not measured in Form B. It was more effective to eliminate it entirely, for the purposes of this experiment, by comparing scores from surveys made at the same season of the year.

Still, in order that the scale might be used at different seasons of the year for other purposes than in this experiment, the seasonal variation in Form B was greatly reduced as compared with Form A. The technics described in Part I, B, 2, c for reducing the seasonal error by eliminating questions showing seasonal variation or else standardizing them on one season were carried out in full. For example, questions dealing with the frequency of bathing in summer and winter were dropped; others, such as those about vegetables used in winter, were standardized on the particular season which clearly differentiated better hygienic practices from poorer ones.

c. Informant error.

(Part I, D, 2, c)

The variation between different informants from within one family was measured. Each of fifty families was surveyed a second time by the original surveyor. The correlation between the scores derived from the two informants was .91 (P.E.=.016 S.D.=120, N=50). In order to test what influence the sex of the informant might have the schedules were sorted into those supplied by men and those supplied by women and the correlation proved to be .92 (P.E.=.015 S.D.=125.5, N=45). The probable error of measurement due to informants is 24 points of score.¹⁴ This means that an observed family score, if repeatedly reobserved from different informants, would vary within 24 points in half the reobservations. This reliability coefficient of .91 may be taken as the best measure of the reliability of the Form B scale score, for it is the measure of

14. P.E. measurement is $.6745 \text{ S.D. } \sqrt{1-r} = .6745 \times 120 \sqrt{1-.91} = 24$. Odell, C. W., Educational Statistics, Century Co., 1925, p. 232.

the extent to which two observations of the same data agree. There was no significant difference, or constant error, between the informants as the observed difference between mean scores was only thirty five hundredths of its standard deviation.

This finding validates the claim that the scale measures *family* hygiene. It is not appreciably dependent on the individual in the family who gives the information. If it measured individual hygiene there would be much more variation between individuals. This was proved by a comparison of the questions about individual habits of cleanliness, etc., (No. 71-87 of Form A) with the other questions. On account of larger individual variation these questions on cleanliness were dropped in Form B. The result is a high correlation between different informants in a family.

The reliability correlations between information secured from informants of different sexes for each of five sections of the scale and for some of the items of Section I on Vital Statistics are given in the table below.

Table 3. Reliability Correlations.
Determined from the scores of the male vs.
the female informant in each family
N = 45

	r	P.E.
Scale score, Form B	.92	.02
Brief-Scale score	.90	.02
Remedies for Sickness, Section II	.82	.03
Infant Hygiene, Section III	.82	.03
Food and Cleanliness, Section IV	.76	.04
Insects, Section V	.84	.03
Housing, Section VI	.96	.01
Vital Statistics, Section I,		
Number of births per wife	.67	.06
Number of minors dying per family	.22	.12
Ages of members of the family	.99	.001
Days spent in bed with sickness by all members of the family during the previous twelve months	.98	.006

The fact that the Brief Scale is practically as reliable as the full Standard Scale means that it can be used in place of the latter without loss of scientific accuracy in regard to reliability.

The very high correlation of .96 shown by the Housing Section is a reflection of the greater objectivity of its items. They depend more than the items of the other sections upon the surveyor alone. In the other sections there is variation in the surveyor on two different occasions plus variation in the informants.

There were no significant constant errors in the scores of the Brief Scale or any of the sections.

The reliability correlations under Section I measure the reliability, not of hygiene practice, but of the health indices that were used as criteria against which to check hygienic indices.

The correlation of the statements of the two informants as to the number of babies born is very low considering that a correlation approaching perfection might be expected. It seems due to a confusion in the informants' minds, which was not sufficiently clarified by the surveyors, as to whether stillbirths, miscarriages, abortions, etc., were to be included or excluded. The fathers, and even some mothers, forgot babies who, though born alive many years previously, had died soon after birth without being named.

The correlation of information as to the number of children in the family who died before coming of age might also be expected to approach perfection. The confusion here was in the schedule in not specifying clearly whether deaths during the two preceding years were called for, as in a previous question, or whether deaths at any date prior to the survey were wanted.

The other two correlations are surprisingly high. The reliability of ages was expected to be low on account of lying due to fear of conscription. But the observed coefficient would have been even higher except that the ages of two young men in one family were moved up into the forties by one informant and pushed down into the teens by another—obviously in fear of conscription. Of course, there was lying, but as long as the family lied consistently the reliability correlation would be high.

There seems to be no reason to suspect lying in the information as to days spent in bed from sickness. No free relief or treatment was at stake. And yet the degree of agreement between informants is so high as to make one suspicious of it in data that are so subject to errors of memory. Of course it

does not mean that the husband and wife have counted the days and that their statement therefore is an accurate record of the days spent in bed. It probably means that after the sickness is over it is referred to in family conversation as "She was sick for a week", or "He was unable to work for twenty days", and the number becomes a standardized family tradition through frequent repetition.

It should be noted that the information was secured from the two informants independently. Neither was present when the other was being questioned. In the majority of cases neither communicated with the other between the interviews. On questioning the second informant as to his knowledge of what had been asked of, or replied by, the first informant it was always found that they had not gone into any detail but had merely made remarks about the people who "came and asked a lot of questions about sickness and a lot of other things." Here and there an outstanding question had been communicated. But not once was any systematic attempt discovered to prepare the second informant for the interview by the first informant. This was natural as no one expected to be resurveyed.

The ages at death were checked by percentage of discrepancies between the informants. There were too few cases per family to make a correlation coefficient a significant measure. Out of the fifty replies there were two discrepancies or four per cent of error.

Before leaving this section it should be pointed out that a high reliability correlation does not necessarily mean truthfulness of response by the informant. The correlation measures consistency of responses and not the sincerity of them. With collusion the family may lie consistently. Without collusion individual differences will lead to inconsistencies. A high reliability, such as found here, therefore means very small individual differences due to ignorance or intention to deceive or to other causes, but does not measure the extent of ignorance, intention to deceive, etc., in so far as they are shared alike by all the members of the family.

Such lying as may exist should not be assumed always to be towards raising one's hygienic score. It is a two-way error. These unsophisticated and ignorant families are as likely to lie in ways decreasing their score as to increase it. For example, because some sincerely believe that taking baths is risky and ventilation during sleep is harmful they exaggerate these un-

hygienic practices just as often as others over-claim hygienic practices.

d. *Interviewer error.*

(Part I, D, 2, d)

The interviewer variation between the scores obtained by different interviewers of the same families may be split into two types of variation for more accurate measurement. There is the variation between questioners as some put the questions with superior clarity and explanation than others. There is also the variation between recorders as the reply of the informant has often to be interpreted in recording it in the objective categories of the scale.¹⁵

The interviewer error (including both questioner and recorder errors) was measured as follows: A sample of eighteen families was surveyed three times on successive days. The same informant was used throughout but three different interviewers. These rotated so that each interviewer surveyed six families for their first schedule, six others for their second, and another six for their third schedule. For studying constant errors between trials all the cases of one trial would be grouped together thus averaging out the individual differences of the surveyors. There were no significant differences between trials.

Next the constant differences between interviewers, regardless of priority of trial, were found and proved also to be too small to be statistically significant.

The variable error due to different interviewers was given by correlating the fifty four pairs of scores. Each family, surveyed by A, B and C, yielded scores which could be compared in three ways: A, B; A, C; and B, C.

The earlier survey score was labelled *x* and the later score *y* in each pair. The raw correlation coefficient was .70 (P.E=.05). The range was narrow, as the standard deviation was 42 points. On correcting¹⁶ this for comparison with other

15. For example, the recorder must decide whether to mark plus, or plus and minus indicating partial credit, or minus, to such answers as the following:

Question:	Answer:
a) "What do you take to stop malaria?" (No. 22a)	Quinine, but sometimes the peddler has none.
b) "Do the chickens ever come into the living room?" (No. 67b).	"Never!" (but the surveyor doubts it and yet can find no evidence.)
c) A handkerchief over the baby's face is claimed as showing that she "sleeps under a net." (No. 30).	

16. Formula No. 186 (and No. 300 for the P.E.) in Kelley, T. L., *Statistical Method*, Macmillan, 1923, pp. 390.

coefficients to the standard rural range whose standard deviation is 120 points, the correlation becomes .94 (P.E.=.02).

Thus the reliability of the scale, as determined by repetition with different interviewers, in the standard rural range, is found to be high, i.e. $r = .94$. This also includes variability of the informant from day to day, so that the interviewer error alone would yield a still higher correlation.

The recorder variation was measured separately. Eight surveyors listened to the replies of one informant and recorded them independently. This yielded twenty eight pairs of scores for comparisons. Differences between each two scores are variation due to the recorder.

As all of these scores would be clustering around one point it would not represent a population sample with scores distributed along a line. To get this situation the procedure above was repeated with three informants—at the average level of the control sample, of the demonstration sample, and of the urban sample. This yielded for correlation purposes fifty six pairs of records representing the rural range and eighty four pairs of records representing the rural-urban range. The correlation between paired scores in the rural range was .97 (P.E.=.005) and in the rural-urban range it was .99 (P.E.=.001). Further analysis showed that there was no significant constant error between recorders.

This all means that variable error due to the recorder was almost a negligible quantity. (Whether this holds true in other surveys depends in part on how well the surveyors are trained).

e. *Scorer error.*

(Part I, D, 2, e)

Variation between scorers was found to be so large in Form A as to vitiate the scale unless it could be reduced in Form B. The five technics described in Part I, B, 2, c, (5) were carried out with great care. The result was that the scoring error was completely eliminated in Form B. The correlation of the scores of a first scorer with a second was .97 (P.E.=.003, S.D.=120). The correlation of the second scorer with a third scorer was 1.00 (P.E.=0). This means that when a few errors had been picked up by a second scoring, a third scoring showed a perfect correlation or a complete absence of any further errors. This indicates that a second scoring is desirable

completely to eliminate all clerical errors—although, if a reliability of .97 is sufficient for the purpose in hand, a single scoring will do. It should be noted that in a survey where the range of scores exceeds the above-mentioned rural range (where the standard deviation of scale scores is 120 points) the correlations will be higher. In such wider ranges the error of a single scoring will become relatively smaller.

There was no constant error between scores. The conclusion then is that all scoring errors were completely eliminated in Form B.

f. *Schedule error.*

(Part I, D, 2, f)

Variation between different schedules, or ways of stating the questions, was measured by comparing Form A with Form B. This difference between the scores of Form A and of Form B can be analysed into three parts. One part is due to difference in *selection* of items. Form A had 270 questions of which only 77 were retained in Form B. The second part is due to difference in *expression* of items. The form of asking a question and the arrangement of the space for response on the printed schedule might shift the emphasis in subtle ways. The third part is due to difference in *weighting* of items. The number of points assigned to one and the same answer was not the same in the two forms.

If desired, each of these three parts could be measured separately.¹⁷ However, here the net effect of the three together was measured, producing a correlation of Form A scores with the transmuted Form B scores in the rural-urban range of .95 (P.E.=.005, N=162, S.D.=184). Reduced to the standard rural range where S.D.=120 this coefficient becomes .90.¹⁸

The amount by which these coefficients fall short of unity is probably due chiefly to the selection factor. It is obvious that one quarter of the questions of Form A that were selected

17. By taking the Form A schedules and the Form B schedules of one sample and rescored with a common weighting only the items common to both, the part of the difference due to difference in expression would be isolated. It is measurable by correlation for the variable error by the significance ratio of the difference between means for the constant error. Next, by correlating the Form A score with a score derived from those items from Form A, which were common to Form B, the selection factor could be isolated and measured. Then by scoring the common items, but with the weights of Form A and of Form B, the weighting factor and the expression factor could be measured together and the previously determined size of the expression factor could then be deducted, thus isolating the weighting factor.

18. By formula No. 186, Kelley, T.L., Statistical Method, Macmillan, 1923, p. 223.

for Form B do not correlate perfectly with all the questions of Form A. It is reasonable to expect that the selection factor alone in Form A would lower the correlation from unity to .90 even were there present no factors of difference in expression or weighting.

An intensive study was made of the selection factor in Form B. This selection factor was due to the fact that Form B was made up to the extent of only 87% (872 points) of items from Form A, the other questions being so drastically modified as to be not comparable. When transmuting Form A data of 1931 to Form B schedules the score of these items had to be interpolated. This process of proportional interpolation attempted to correct for the selection factor in Form B. The question then became: How adequately does interpolating the scores correct for the selection factor in Form B?

To test this question eighty Form B schedules (of the e and c samples of 1933) were rescored. The total score of those items found only in Form A was computed and an artificially interpolated score was determined by interpolating from this total score. This interpolated scale score was then compared with the actual scale score. The two correlated at .996 (P.E.=.0006, S.D.=120 = standard rural range). This correlation is so nearly perfect that the conclusion is that interpolating entirely corrects for the selection factor in Form B as far as its variable or two-way influence is concerned.

But the selection factor was found to be not negligible as far as its constant or one-way influence was concerned. The mean of the artificially transmuted scale scores was eleven points higher than the actual mean score of these eighty cases. As these eleven points were more than ten times the standard deviation of the difference, this constant difference is highly reliable. This all signifies that the interpolating in transmuting Form A data to Form B scores raises the latter by a constant error of eleven points. This should be deducted from all transmuted scores.¹⁹

19. The alternative of not interpolating was tested out and found, as expected, to give a much larger constant difference in the other direction, i.e., to give a lower score requiring some constant added amount.

The reason why the proportional interpolation formula overcorrects for the selection factor seems due to the villagers earning a slightly larger proportion of the maximum score on the questions of Form B which were transferred from Form A, than on the remaining questions.

Another indication of the schedule error is obtainable from the correlation of the full Form B scores with the Brief-Scale scores. The latter is made up of twenty of the fifty five scored question-items of the former. The weighting and the expression factors are identical and only the selection factor is present. The correlation between the brief and the full scale scores in the standard rural range (S.D.=120) was .97 in one sample of fifty families and .98 on a resurvey. (Here the selection factor is smaller as the Brief Scale comprises one half the scored points of the full scale and all of Form B is more highly intercorrelated or unified than was Form A). This means that the Brief Scale is almost identical with the full scale in that the items selected for the Brief scale correlate very highly with the items omitted.

g. *Form of equation expressing all errors in the scale.* (Part I, D, 2, g)

It is now possible to synthesize these measurements of separate errors and obtain an approximate expression of their total effect in measuring the hygienic status of families. An observed score is compounded of the true score and errors of measurement. If these errors are uncorrelated with the true score or with each other²⁰, then their relation is given by the following equation:

$$S_o = S_t + E_{\text{season}} + E_{\text{informant}} + E_{\text{interviewer}} + E_{\text{scorer}} + E_{\text{schedule}} \text{ in which}$$

S_t = the variance (standard deviation squared) of the true scale scores,

S_o = the variance of the observed scale scores,

E = the variance of the error of measurement in the subscript.²¹

In the present experiment E_{seasonal} was eliminated by surveying at one season only so that this variance is zero. Similarly by using only Form B in the comparisons of this experiment, there is no variation between forms and therefore this variance vanishes. By rescoring all schedules the scorer error

20. This was tested. Correlation coefficients equalling zero (within probable error limits) were found between:

informant differences and scale score;	$r = -.16$ P.E.=.09
informant differences and scorer differences, (1st and 2nd scoring);	$r = .01$ P.E.=.10
scale score and scorer differences, (1st and 2nd scoring);	$r = .05$ P.E.=.10
scale score and recorder differences.	$r = .00$

21. Calculated by the formula for variable errors of measurement as given in Odell, C.W., Educational Statistics, Century Co., 1925, p. 232.

was eliminated so that the E scorer was zero. The equation then simplifies to :

$$S_i = S_o - E_{\text{informant}} - E_{\text{interviewer}}$$

For this the observed quantities in the rural range are: $= 120^2 - 34^2 - 29^2 = 14,400 - 1156 - 841 = 12,403$ $\sqrt{S_i} = 111 = S.D._i$

Thus in the standard rural range in which the observed standard deviation is 120 points, the true standard deviation of the hygiene scores, freed of error, is 111 points.

In sum²², then, the variance of an observed scale score in this rural range ($S.D.=120$ points) is made up to the extent of 14 per cent ($1,997/14,400$) by the errors of measurement which have been themselves measured (informant and interviewer errors) and 86 per cent by the true variance (with any residual unmeasured errors). These errors may be considered as irrelevant attendant conditions obscuring the exact observation of the hygienic status of the families.

3. Validity studies.

(Part I, D, 3)

a. Correlation of hygiene score and health indices.

Since hygiene is one of the largest factors contributing to health a hygiene scale to be valid must correlate with indices of health.²³

The following health indices were studied : —

Mortality—

Percent of children surviving in families of five or more

Morbidity—

Laboratory examination of stools for intestinal parasites

Doctors' diagnoses of common diseases

Family's report of sickness in the past year

Family's report of days spent in bed in the past year

Family's report of days spent in bed in the past month

22. The foregoing analysis of errors of measurement may seem to some an unnecessarily detailed one. But if the social scientist is to get his findings to the high degree of precision of the older sciences, it is essential that he refine the precision of his measuring instruments by means of minute analysis of the more numerous types of error to which such instruments as schedule cards are subject.

23. This is a necessary but not a sufficient proof. Even though it correlates with health it may not be a causal factor. For an effect of health would also correlate with health indices. The evidence of the hygienic culture patterns measured in this scale being causal factors in promoting health, is taken as reasonably well established on the whole by the medical sciences, as evidenced by the judgment of the doctors who passed upon the selection of items in this scale. The degree to which the hygiene score from this scale correlates with health indices is therefore taken as a measure of the degree to which these hygienic practices are partial causes of health in the situations here studied.

Longevity—

Age at death

A correlation of .39 ($P.E.=.10$) was observed in the demonstration sample between the number of the family asserting in April 1931 that they habitually slept without mosquito nets in the summer and the number of the family having malaria in the summer of 1930. Although this is low, it is significant when one considers that sleeping under a net is only one of many preventive factors and that the information is approximate only. Its inaccuracy is due to the facts that sometimes the people do not use the nets they have, or that they use nets having large rents and apertures in them, or that they report slight and heavy and chronic cases of malaria without distinction. Also the per cent of the family reporting malaria is a very crude index of its intensity. As the surveys were made in April when malaria was not active, better data for validation was not securable.

A correlation of .30²⁴ ($P.E.=.08$) was observed between the hygiene scale score and the total number of cases of major sickness that a family reported they had had during the preceding year. Although this is low, it is based on very crude data as regarding the criterion. If the reliability of the criterion were known in this range, the correlation might be fully twice the observed coefficient when corrected for attenuation. The crudity of this morbidity index lies in the fact that no doctor's diagnoses were available for all this group, so that their own statement and memory of what they considered a sickness worth reporting constituted the criterion. When an instrument, of as high reliability as the hygiene scale was demonstrated to possess, is correlated with a variable of low reliability the effect is always to reduce the true correlation between them.

A correlation of -.52 ($P.E.=.08$)²⁵ was found between the hygiene scale score and the total number of days spent in bed with sickness during the previous year by all the members of the family. Again, this correlation, while low, is significant. Probably the true correlation is considerably higher, since the informant's memory of how many days were spent in bed by

24. The range of these scores was 132 or slightly greater than the standard deviation of 120 of the "standard" rural range.

25. The observed correlation was -.32 ($P.E.=.05$), $N=127$, in a range whose standard deviation was 66 points of score. On correcting this to be as of the standard rural range of 120 points it becomes -.52. (See Kelley, T.L., *Statistical Method*, Macmillan, 1923, p. 225). This correction is made in order to make the validity coefficients from different ranges comparable.

himself, or other members of the family, during the past twelve months was probably inaccurate. Time means little to a people who use no calendars and who often do not know the day of the week or the name of the current month. They count by the longer periods of seed time and harvest, the rains, and the rhythm of the moon. Like animals, they curl up in the corner when they feel ill and get up when they feel better. Some doubtless reported partial days in bed, others omitted them. The fact of high consistency in the reported number of days spent in bed (as shown by a correlation coefficient of .98 between the two informants in each family) means that minor sicknesses are forgotten and only outstanding ones that have become a definitely verbalized family tradition tend to be reported. Therefore when a correlation of $-.32$ is observed, in spite of these inaccuracies in the criterion, it is considered that the true relationship of hygiene score to morbidity is in all probability a good deal higher.

Another validity correlation was between a form of mortality index²⁶ and the scale score. On the hypothesis that unhygienic families would tend to lose a larger percentage of children, a selection was made of all families which had had five or more live births. The percentage of their children who had survived either up to the age of twenty one or up to the current date, was taken as the criterion index of mortality. The observed correlation of the hygiene score with this percentage surviving in the rural-urban group was .76 (P.E.=.04). As this was in a wide range of one standard deviation of 221 points, it shrinks to .53 on correcting it for comparability with the standard rural range of an S.D. of 120, which was found in the rural samples of this study.

This correlation, in the neighborhood of .76 between the hygiene score and the per cent of children surviving, is the highest validity correlation observed in these samples. It established the fact of a close relationship between the hygienic culture complex measured in this scale and health, even though the latter is very imperfectly measured by this mortality index. The true correlation is higher and cannot be lower since errors of measurement tend to lower and not raise correlations. Two large sources of error are present. In addition to the confusion

26. The usual form of mortality index expressed as a percentage of the population (or of an age group of it) which has died during one year, was not securable from samples as small as these. Only 105 deaths were found in all the samples on all surveys covering four years.

noted above as to the meaning of the question about children surviving, there was the fact that no distinction was made because of the degree of maturity of the family. Those whose surviving children had all reached twenty one years of age may be said to have completed the test of survival. But those whose children were still infants, there being the possibility that some might die before becoming adults, had not completed the test of survival. The score of survival of the latter tends to be too high since with time it may be reduced but cannot be increased with the present children. To mix scores dealing with completed families with those of uncompleted families is mixing accurate measures with measures that are spuriously high, the net effect being to reduce any real correlation between that measure and some other phenomenon.²⁷

The scale score was further correlated with a crude index of longevity. This index was the reported age at death of the 55 deaths (in the two previous years) of the normal rural (b+c) sample and of the urban (U) sample. This correlation coefficient was .65 (P.E.=.07, S.D. scale = 120, N=55). This moderate degree of correlation between indices of hygiene and of longevity is a further indication that what the scale measures is at least related to health.

27. An interesting observation emerges from an analysis of the correlation scattergram. It was divided at the two means into four quadrants, and the following percentages of cases were observed in each quadrant:

Hygienic Few surviving 3.6%	Hygienic Many surviving 40%
Unhygienic Few surviving 47.4%	Unhygienic Many surviving 9%

There may be noted a slight tendency for the "unhygienic but many surviving" quadrant to contain more cases than the "hygienic but few surviving" quadrant. This suggests that, if a family is hygienic, their chance of having only a few of their children survive is relatively small (3.6%) i.e. the chance of having many survive is large. But, if a family is unhygienic, they have a better chance of many surviving in spite of lack of hygiene (9%). Fortunate amounts and timing of exposure to disease may build up immunities and tend to make for longevity in very unhygienic environments. *This means that hygiene, as indicated in this situation, is a means to survival but not the only means.* Development of immunities may also serve but this is the result more of chance than of conscious effort. This finding, however, is based on differences in percentages which are not altogether statistically reliable on account of the smallness of the sample, and should be taken, therefore, not as an established fact but rather as a suggested hypothesis.

If verified, this hypothesis might lead to drastic revisions of doctrines of hygiene. Instead of teaching cleanliness and avoidance of sources of infection exclusively, *controlled exposure* to such infections may become a better means to health and longevity in environments which are inescapably unhygienic.

In general, however, the quantitative study of the validity of this scale was far from satisfactory on account of the inadequacy and inaccuracy of the health indices available as criteria. Further research with better health records is desirable.²⁸

b. *Correlation of hygiene score and income.*

(Part I, D, 3, b)

The hygienic complex measured in this scale correlates not only with indices of health but also with indices of economic income. In fact, the relation between hygiene and income is fully as close as between hygiene and health in the sample populations studied.

28. In exploring for relationships in the data, the following additional validity correlations which were not statistically significant were observed:

Variable x	Variable y	Group	r	P.E.	N
Hygiene score of family	Days alleged spent in bed during the previous month	Rural-urban	-.07	.07	91
"	Per cent of children surviving (regardless of number of children)	"	.12	.05	194
"	Doctor's diagnosis of degree of trachoma of individuals	"	.14	.07	99
Question No. 28, Remedies for Sore Eyes	"	"	.04	.07	99
% of family sleeping under nets	% of family diagnosed malarial by the doctor	Demonstration sample	.12	.10	34
Score of Malaria Question No. 22 (Family of diagnosed individuals)	Doctor's diagnosis of malaria	Experimental	.01	.08	101
Hygiene score of family	Laboratory report as to presence or absence of intestinal worms in individuals	Some of the demon. and experimental samples	-.11	.18	27
"	Doctor's diagnosis of tenia	Experimental	.01	.16	33

The index of rural income was the agricultural tithe and land rental tax.²⁹ Families who are solely dependent on agricultural sources of income were taken so that, knowing the ratio of tax to income, their gross income could be estimated. The index of urban income was the average of two independent estimates of the annual income of fifty families. The estimators knew the families intimately and their estimates correlated with each other at .96. (See Part I, B, 3, b).

Table 4. Correlations of hygiene score and income.

Income index	Group	r	P.E.	S.D.	N
Tithe and rental	Rural experimental village	.54	.08	55	37
Tithe and rental in standard rural range	"	.81	.06	120	37
Tithe	"	.40	.09	55	37
Rental	"	.39	.09	55	37
Average estimated income	Urban	.34	.10	52	32
Tithe and rental, or average estimate	Rural and urban	.81	.03	223	69

The correlation of .54 between income and hygiene in the rural range derived from Form B compares with the correlation of .33 that was observed two years before in using Form A. The high correlation of .81 in the rural-urban range is practically the same as that observed two years previously. Although there was a change in the basis of taxation during the interval between the surveys and also a change from one form of the hygiene schedule to another form, yet the fact that the relationship between income and hygiene was little changed shows that the relationship is a stable one and that its determination is reliable.

As pointed out previously, health and wealth probably interact, neither being exclusively a cause of the other. The high correlation observed between hygiene and income does not

29. For fuller description of the taxes see Part II, A, 4, c. (Description of the Sample Populations, Economic Situation, Taxation). For fuller description of the urban estimates see Part I, B, 3, b. (Correlation of Income and Hygiene score from Form A.) For combining the rural and urban samples the tax was considered to be one fifth of gross income in this particular year. Ordinarily the tithe is one eighth of the crop and the rent tax in a "jiftlik" village is additional. But under the commuted tithe with a base of the years 1927-29 and the fall in agricultural prices since then, the average income was estimated to be about one hundred Syrian pounds and the average tax was 18.34 pounds.

in itself answer the question of the extent to which one is the cause of the other. The coefficient merely summarizes the total amount of interplay of cause and effect including the influence of other factors that are mutually related to both income and hygiene. It is socially desirable, however, to attempt to draw some causal inferences or hypotheses from the correlational data.

In the correlation scattergrams of these income-hygiene studies the data shows a triangular, and even a curvilinear trend.³⁰ While most of the cases lie in the second and third quadrants in the figure below (as is to be expected, if correlation exists) yet many cases occur in the fourth quadrant and almost none in the first quadrant.

Rich and unhygienic	Poor and unhygienic
Quadrant 1	Quadrant 3
Rich and hygienic	Poor and hygienic
Quadrant 2	Quadrant 4

This means that very few richer families (above average in income) are below average in hygiene. If they have means it is easy and usual to maintain higher hygienic standards. But quite a few poorer families are above average in hygiene. Poverty it seems is not an insuperable obstacle to maintaining hygienic standards above the average. Apparently, in this matter, lack of means may be offset by knowledge and effort. The tendency here for superior hygiene to be associated with both rich and poor, but for superior income to be associated only with superior hygiene, has important social and educational significance. If this tendency should be generally corroborated in other samples, it would mean that, within limits, education may raise standards of hygiene in spite of poverty. It further suggests that educational efforts should be concentrated on those below average in income, because the class above average in income maintains superior hygienic practice by virtue of its wealth without health propaganda.

c. *Intercorrelations of hygienic culture complexes.*
(Part I, D, 3, c).

In discussing the validity of this hygiene scale it has been implicitly assumed that the scale as a whole is a somewhat unified culture complex, i.e. an integrated group of specific culture patterns. To what extent is this assumption justified? Techniques based on intercorrelation of the parts of the scale can tell

30. This was previously found two years earlier from the scores of Form A (See Part I, B, 3, b).

the extent to which the scale score represents a unitary integration of culture patterns on the one hand, or represents a mere arithmetic average of a heterogeneous collection of those culture patterns on the other hand.

As the intercorrelation of the fifty five scored questions, representing fifty five culture patterns, would involve fifteen hundred and forty correlation coefficients, an analysis in such detail would become prohibitive. Therefore the intercorrelations were studied from the five sections,—Remedies for Sickness, Infant Hygiene, Food and Cleanliness, Insects and Housing. Each of these, relative to the entire scale is a sub-complex of the hygienic culture complex. In the table below are given the data for studying the structure of this total hygiene complex through measurement of the interrelation of its parts and through the mathematical analysis of their underlying factors.

Table 5. Intercorrelation of the Section Scores in the Rural and Rurban³¹ Ranges³²

	Section	II	III	IV	V	VI	Scale
II.	Remedies	.82	.05	.32	.41	.11	.66
III.	Infants	.77	.82	.07	.15	.20	.42
IV.	Food & Cleanliness	.85	.85	.76	.34	.10	.68
V.	Insects	.84	.70	.82	.84	.14	.67
VI.	Housing	.87	.85	.76	.84	.96	.23
	Scale	.92	.93	.93	.94	.97	.92
	Average inter-correlation	.83	.79	.82	.80	.83	

The coefficients in the upper right triangle of the table are from the rural range (b+c sample N=100. Scale S.D.=43) while those from the lower left triangle are from the rurban³¹ range (b+c+U sample, N=150, S.D. scale =175). The coefficients in heavy type in the main diagonal cells are reliability correlations between male and female informants (rural range, S.D. scale = 120, "r" sample, N = 45).

31. A single term for the rural-urban range is needed and may be conveniently formed by telescoping them.

32. Table 5a Probable Errors

	Section	II	III	IV	V	VI	Scale
II.	Remedies	.03	.07	.06	.06	.07	.04
III.	Infants	.02	.03	.07	.07	.06	.06
IV.	Food & Cleanliness	.02	.02	.04	.06	.07	.04
V.	Insects	.02	.03	.02	.03	.07	.04
VI.	Housing	.01	.02	.03	.02	.01	.06
	Scale	.01	.01	.01	.01	.00	.02

For this monograph all calculations of correlation coefficients (Pearson product-moment) and of probable errors were carried to four decimal places. They are reported only to two decimal places, as beyond that is a statistical refinement not justified by the size of the probable errors.

The outstanding finding in the table is the contrast between the very low correlations in the rural range and the high correlations in the rural range.

The average intercorrelation between section scores is negligible (.12) in the rural range, while it is high (.75) in the rural range. In the rural range only three of the ten coefficients are more than four times the probable error while in the rural range all the coefficients are highly reliable. In the rural range the average correlation between Section score and Scale score is .53 while in the rural it is .94. The longer range, or greater variation, in the rural sample results always in increasing the correlation as compared with that in the shorter, or more homogeneous rural range. Traits will show an appreciable positive correlation in the rural range, not because they are intrinsically related to each other, but because each is an integral part of the relatively homogeneous city culture at one extreme and of the very different, but equally homogeneous, village culture at the other extreme. The correlation between such traits is thus due to their mutual association with what might be called the *rural factor*, which is the wide variation between the cultures of village and city.

The next finding³³ is that the correlations between the scale and each of the five sections are always positive and reliable varying from moderate (averaging .53) in the rural range to very high (averaging .94) in the rural range. Some correlation is to be expected here from the fact that the scale includes the particular section along with four others. But such high correlations mean that the scale possesses a fair degree of unity in the rural range and a very high degree of unity in the rural range. It is thus proved not to be a heterogeneous collection of unrelated culture patterns.

A third major finding is that the structure of the hygienic complex is a function of the range in which it is observed. In the rural range the Housing Section and Infant Hygiene Section are almost independent of the rest (average intercorrelations of -.04 and .02 respectively). In this range the other three

33. A technical by-product of this finding is to justify the system of interpolating scores of missing questions by crediting them with points proportional to the points earned on the other questions. If there were no correlation between sections this procedure would be indefensible. If intercorrelation were perfect the interpolation would be perfect. Actually when considering the wide rural range the interpolation gives almost perfect results. Thus the correlation of the Scale score with any combination of four of the five sections is upwards of .98.

sections (Remedies, Food and Cleanliness, and Insects) are the relatively homogeneous core of the culture complex, as reflected by correlation technic. But in the rural range this structural configuration is reversed. Here the average intercorrelation of the Housing Section is the highest (.83) and of the Infant Hygiene Section (.77) is above the average (.75) of all intercorrelations. The lowest average intercorrelations are here shown by the Remedies Section and the Food and Cleanliness Section. Thus the relative importance of the role that each section plays in determining the whole scale depends on the range observed. Again it is demonstrated that social data are relative to the group, the date, and the observational instrument. Unless these are specified or standardized the most contradictory findings may seem to be indicated.

4. A brief scale.

(Part I, D, 4)

a. *Selection of the items.* To fill out Form B, with its seventy seven numbered questions and many more subsidiary questions, a practiced surveyor requires a minimum of three quarters of an hour. A novice requires twice that time. This is possible for scientific research purposes but for a government health department or a private clinic or school, the time cost of surveying a community becomes very great. Accordingly a briefer scale was constructed comprising twenty five questions. Five questions secured identification and vital statistics data. The remaining twenty scored questions were selected without modification from the full or Standard Scale so as to comprise 500 points. This is exactly one half of the maximum score of the Standard Scale although it has but one third the number of questions. This means that the more important questions, or those with more score points, were selected.

It was also considered desirable to eliminate the necessity of inspecting the house. In conservative Moslem houses, above the peasant class, only a woman surveyor can inspect the kitchen as it is in the women's part of the house. But it is desirable to have the scale independent of the sex of the surveyor. Again it is often more convenient to interview the informant wherever found, whether in the fields or in the café or elsewhere. Therefore questions of inspecting the W.C. (No. 66), and measuring the window-to-floor-area ratios (No. 69) were omitted.

Thirdly, the more time-consuming questions were also omitted. For example, question No. 42, which requires canvassing a list of fifty two vegetables and fruits, was eliminated.

The Brief Scale was printed on a double-page sheet, with condensed scoring rules attached. The eliminations mentioned and the omission of all general directions and spaces from the leaflet made it possible to condense the twenty pages of the Standard Scale into four in the Brief Scale. It takes twenty minutes to half an hour to fill out.

b. *Correlation with Standard Scale.* The Brief Scale scores and Standard Scale scores were correlated together in a rural sample. This was the "r" sample of fifty families, representing the control, experimental and demonstration samples, which had been twice interviewed to determine the informant error. The correlation of the two scales, in the "standard" rural range where S.D.=120, in the 1st informants' schedules was .97 (P.E.=.006) and in the 2nd informants' schedules was .98 (P.E.=.005). This indicates consistency in the finding of a very close relationship. *The correlation is thus proved to be so high that the scales may be interchanged without appreciable difference in result. This means that the Brief Scale may be used, because of its administrative superiority, without loss of scientific validity.*

The reliability of the Brief Scale is excellent. The first versus the second informants' Brief Scale scores correlate together at .90 (P.E.=.007)—compared with .91 for the Standard Scale on the same schedules.

For norms of a tentative sort the Brief Scale showed the following :

	Mean	Standard Deviation
Brief Scale, average of schedules		
1st and 2nd informant	270	66
Standard Scale, average of schedules		
1st and 2nd informant	451	120

5. *Summary of the extent to which Form B meets the specifications.* (Part I, D, 5)

The specifications to be met by a satisfactory hygiene scale have been described. The degree to which Form A met, or failed to meet, these specifications has also been reviewed. The detailed discussion of the studies on Form B in the preceding sections may now be summarized by a similar review.

a. *Validity.* The degree to which the hygienic knowledge, practices and conditions specified in the questions of this scale are a *unified culture complex* and not a mere collection of unrelated items was demonstrated by the intercorrelations of

the sections with each other and with the scale score. That it is highly unitary in the rural range and moderately so in the rural range is shown by average correlations of the sections with the scale of .94 and .53 respectively.

Since family hygiene was viewed as those contributory factors of health which are under the control of the family, the hygiene score should correlate with *health indices*.

The following correlation coefficients were among the more significant ones found :

Table 6.	Validity Correlations
Mortality .76 or "survival"	Scale score vs. per cent of children surviving in families with five or more live births. (S.D. = 221 as observed; $r = .53$ when S.D. = 120 as in the standard rural range, $N=55$).
Morbidity - .52	Scale score vs. number of days spent in bed with sickness during the previous year by all the members of the family (S.D.=120, $N=127$).
Longevity .65	Scale score of family vs. reported age at death of all individuals in those families who died during the two years of this study (S.D.=120, $N=55$).

That the scale measures *family* hygiene was demonstrated by its freedom from individual differences. Evidence of this is a correlation of .92 between a male and a female informant in each family. That it is adapted to Syria and to rural conditions is evidenced by the fact that the scale provided for the recording and scoring of all responses encountered and also differentiated the families without undue skewness in the rural, in the *urban*, and in the rural-urban ranges.

b. *Reliability.* To test the reliability of the scale it was reapplied to different samples; it was reapplied to one sample at different seasons; it was reapplied to another sample comparing two different informants; to another sample comparing two different interviewers; it was rescored; and finally the data of one form of the schedule was transmuted into a second form. *No significant constant errors were found in Form B of the scale.*³⁴

The variable error due to surveying at different seasons was eliminated by using one season only.

34. A difference in the weighting in the scoring systems of Form A and Form B resulted in a difference between mean scores, but this could be corrected by deducting a constant from the former. Since the experiment used only Form B, and all future surveys will likewise do so, the fact that the provisional Form A shows a constant difference is of no consequence.

That the variable error, due to different informants giving different responses to the same question, was small is shown by an index of reliability of .95 between male and female informants. This means that the probable error of measurement of a family's score is 24 points.

The table below summarizes the amounts of the errors of measurement of the different types.

Table 7. Errors of Measurement

Source of Error	Variable error	Constant error
	P. E. — .6745 S.D. $\sqrt{1-r}$ (in terms of points of score)	Significance ratio = $\frac{M_2 - M_1}{S.D. \text{ diff.}}$ (in terms of abscissas of the normal probability curve)
Sampling Sample b vs. c	*	.01
Seasonal spring vs. summer	Measurements made in April and August were so mixed with the other types of error below, plus instructional error, that the seasonal error was not isolated	
Informant male vs. female	24	.35
Interviewer 1st, 2nd, 3rd	20	1.26
Scorer 2nd vs. 3rd	0	0
Schedule Form A vs. Form B	25	21.7

Basic data for the errors			
	Index of reliability	Range	N
	Square root of reliability correlation coefficient	Standard deviation of Form B scores. 120 = SD of the "standard rural range"	Number of families in the sample
Sampling Sample b vs. c	*	39, 48	60 vs. 40
Informant male vs. female	.95	120	45
Interviewer 1st, 2nd, 3rd	.97	120	54
Scorer 2nd vs. 3rd	1.00	123	50
Schedule Form A vs. Form B	.95	120	162

The variable error due to differing interviewers was found to be small as measured by an index of reliability of .97, giving a probable error of measurement of a family's score as 20 points.

The variable error due to different scorers was completely eliminated as proved by a correlation of 1.00 between two scorings of one set of schedules.

The variable error due to different schedules which had only 25% of their questions in common was measured by an index of reliability of .95 (P.E.=.005, S.D. of Form B=120).

In sum, when only Form B is used, in a survey at one season of the year, and when the scoring is checked, these errors approach the vanishing point and leave the informant and interviewer errors alone. *The best measure of the reliability of the scale is that the index of reliability was .96, secured by repetition with different informants.* The probable error of measurement derived from this is 23 points of score in this range, whose standard deviation of scores was 120.

c. *Administration.* The Form B schedule is self-instructing, the leaflet containing full directions to the surveyors and detailed instructions for asking, recording, and scoring each question. It has been demonstrated that it is simple enough for secondary school graduates to administer, after proper coaching. It has proved completely acceptable by arousing no opposition from the informants, by offending none of their prejudices, nor those of the religious or political leaders or of other persons. The one occasional difficulty of inspecting the house is obviated in the Brief Scale.

The scale has proved independent of language. It has been applied in four languages and often in two languages to bi-lingual families. The expense of equipment is limited to the Form B leaflet. The length of interview required on the average is forty five minutes for the Standard Scale and about twenty minutes for the Brief Scale. Both the Standard Scale and the Brief Scale are arranged to facilitate recording during the interview, rapid scoring afterwards, and statistical tabulations at leisure.

*In sum, the specifications for a satisfactory scale, which were set as objectives at the start, and which were only partially realized in Form A, were fully met in Form B.*³⁵

35. Of course, no scientific instrument is permanently satisfactory. As better data become available more accurate instruments are required. At present the health indices, needed as criteria against which to check hygienic measures, are far too crude and inadequate in the Near East to warrant attempts to make this hygiene scale more sensitive.

PART II

HYGIENIC STATUS

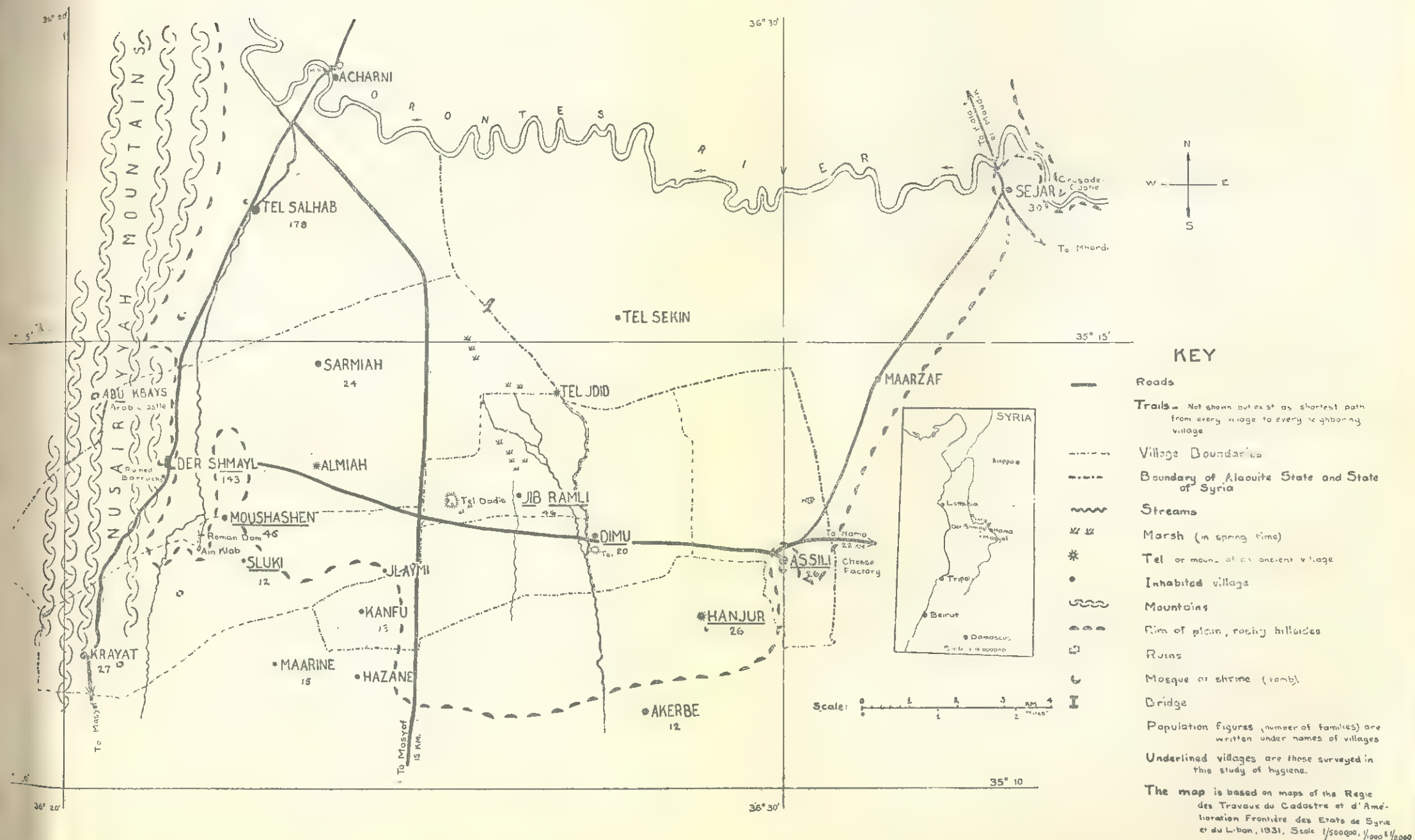
The Measurement of Sample Populations

DEFINITION :

In Part I the measuring instrument was described. With this instrument samples of village populations in the interior of Syria were measured. Part II describes the conditions revealed in these semi-feudal villages of the plains. The summary of these conditions in quantitative form as a score on the hygiene scale can be called their hygienic status. The status of a group is its general level or average point on some scale at a given time. Therefore, for the purposes of this quantitative study of social forces, the hygienic status of a group is *defined* as its average score on this hygienic scale.

$$\text{Status} = S_i = \frac{\sum s_i}{N} = \text{mean score of } N \text{ families on date } i$$

MAP OF THE ALAOUIE VILLAGES IN THE HYGIENE SURVEYS



A. *Description of the Sample Populations.* (Part II, A, 1)

Before going into the details of the hygienic status of these villages, a brief general description in less quantitative terms of their situation in other respects is a necessary background.

1. *Geographic situation.*

The main group of seven villages studied is in the county (Caza) of Masyaf in the State of Latakia (one of the Syrian States under French Mandate). They lie strung out roughly in an east-west line of fifteen kilometers along an old road that is partly built on Roman foundations. This road runs westerly from Hama thirty five kilometers distant and ends at the ruined barracks of Sultan Abdul-Hamid at Dayr Shmayl at the foot of the Nusairiyyah mountains. From there westward across the range to Bânâyâs on the Mediterranean coast is a distance of fifty kilometers as the crow flies. A road runs past Jib Ramli to Masyaf, the county seat, eighteen kilometers to the south. In 1931 these roads were impassable in spots during the winter rains which continue for about three months. But by 1933, after constructing a few culverts and filling in the muddiest areas with stones, they have become passable for cars almost every day of the year.

Some fifteen kilometers north of Assîlî at Castle Sajar the Orontes River emerges from the gorge it has cut through the Hama plateau. It runs on, paralleling the line of villages, across the plain to the mountain range, and then flows north to Antioch and thence westward to the sea. The villages lie along the southern rim of the great marshy and malarial plain of the Orontes. Four of them, Dayr Shmayl, Moushashen, Sluki, and Assîlî, are on rocky hillsides some thirty meters above the fertile plain. The other three, Jib Ramli, Dîmu, and Hanjur are typical adobe hamlets of the plains. Hanjur surmounts a mound which lifts it twenty five meters above the plain. Dîmu has an even higher mound beside it. Originally Dîmu surmounted this mound, but sometime in the past century the mound became too high and a new site beside it was started. Jib Ramli being younger has no mound, though one of its two cemeteries is on an empty neighboring mound.

The three villages on the plain and Assîlî get their water each from a village well which strikes the water table at a

1. The longitude is approximately 40.5°, the latitude 39.1°, and the altitude about 200 meters above sea level.

depth of four meters. These wells depend entirely on rainfall which was 380 cm. in 1932 at Masyaf. The other three villages have springs. In the valley between Moushashen and Dayr Shmayl is a stream which runs dry in summer owing to its diversion for irrigation nearer the source. A branch stream, which arises at 'Ain Klâb ("Spring of Dogs") on Moushashen land one half kilometer from the village, joins the main stream just below Moushashen. This branch delivers about half a cubic meter of water a second in midsummer, and twice that in the spring.

2. *Demographic situation.* (Part II, A, 2)

The population and sex distribution of the various villages is shown below. Altogether in all the different samples a total of 600 families, or a little under three thousand individuals, were studied.

Population pyramids were drawn up but are of dubious significance as peasants do not know their own ages and no records of births or deaths are kept by the government. The women especially are without known ages. Upon being pressed they will one day assert an age of 40 and on the next it will be 60, depending on elusive states of mind. Children's ages are asserted to have increased five years overnight, and are equally likely to decrease similarly overnight! Perhaps the only significant finding is a slight tendency in the Arab villages to conceal the ages of young men of military eligibility—a relic of Ottoman conscription. The sexes are as equal as probable error limits from such small samples would allow. In Moushashen, an Armenian refugee colony, there is an excess of males and a dearth of youth in the teens—both due to the pioneering conditions where men and young couples were chiefly selected for settlement on the land.

The annual death rate in the Arab villages, based on the two years covered in the schedules, was 56 (P.E.=7) per 1000 of population. The birth rate was 67 (P.E.=7). In Moushashen the death rate was 70 (P.E.=12) and the birth rate 105 (P.E.=10). The abnormally high birth rate of the refugee colony again reflects a population where young married folk predominate.

Most of the deaths are of infants. Any child surviving to ten years of age has a high expectancy of life. The average age

of death² of all the 34 Arab deaths was 5.06 years. Except for the general trend for the death rate to be high and average length of life to be very short, these figures should not be examined too minutely because the samples are small and ages are inexact.

3. *Historical situation:—some historical vestiges and the background of this study.* (Part II, A, 3)

a. *Roman.* For the ancient history of the general region of Syria see Olmstead, A.T., *History of Palestine and Syria to the Macedonian Conquest* (Scribner, 1931, pp. 664). The region of these villages must have been a prosperous one in Roman times. One of the great Roman highways from Antioch, "Queen of the East", ran south past Jib Ramli. Its paving blocks still underlie the road to Masyaf. The road from Dayr Shmayl eastward to Hama also shows Roman traces and crosses a branch of the Orontes on a Roman dam in good repair and traces of a mill race. In the mud walls of Jib Ramli can be seen fragments of marble with carved symbols of the cross and Latin letters from the early Christian period.

b. *Arabic.* An hour's climb above Dayr Shmayl, a mediaeval Arab castle, Abu Kbays, crowns a ridge commanding the plain on the east. Opposite it on the eastern rim of the plain is the magnificent Castle of Sajar of Arab and Crusader fame. The ruined castle of Masyaf³ (literally "summering place") was once one of the seven strongholds of the Assassins under the Old Man of the Mountains—a chieftain whose method of warfare in the time of the Crusaders has left its permanent impression on the English language. The descendants of the Assassins, the Ismailiyyah, live in the villages just to the south of Dayr Shmayl.

c. *Turkish.* Later the Turks established their overlordship. Towards the end of the 19th century a feud between feudal lords became so intense that Sultan Abdul-Hamid intervened and established a strong garrison in barracks built on the outskirts of Dayr Shmayl. He ditched and metalled the road to Hama. He exiled the chief baron and confiscated his lands. Part of these "crown lands" (jiftlik) contains the villages of Jib Ramli, Sluki and Moushashen. As a result, in these villages the government is now the landlord instead of the usual feudal

2. With such small samples more refined technic, as of expectancy of length of life at birth, could not be worked out as these require rates at each age.

3. See Hall, Wm. H. *Crusader Castles of the Near East*, National Geographic Magazine, Vol. 59, pp. 368-390, March 1931. Or: Jacquot, Paul, *L'Etat des Alaouites*, Chehab, Catholic Press, Beirut, 1929, p. 291.

families as in the other villages. Later the troubles died down, the garrison was withdrawn, the barracks fell into ruin, and the road, except in spots, has become so stony as to be more avoided than utilized. The Turkish influence was largely limited to collecting taxes and conscripting soldiers. Almost its only trace, aside from a bitter memory among the peasantry, is an occasional peasant who speaks Turkish as a result of military service in the Italian war of 1911, the Balkan war of 1912 or the World war.

d. *French.* It was five or six years after the Armistice before the French occupation, carrying out the Mandate provisions, was fully established and the reins of government had been taken over in such detail as to affect the individual peasant's tax records and other concerns of life. Since then the policing of the countryside, the improving of the roads, the introduction of new crops, such as cotton, figs, etc., a free public clinic in Masyaf, the commuting of the tithe and other measures have been vigorously pushed. The French adviser, "el Moustashâr", at Masyaf actually administers the country. Under this officer, come the mukhtârs or headmen of each village. Under the old Ottoman law, which was continued in essentials by the French, the Mukhtârs are the agents of the central government assisting in keeping order, collecting taxes, etc., and are also the representatives of the local population. They are appointed usually from nominees chosen by the village.

e. *Moushashen.* An historic event of major import locally was the establishment in 1929 of a settlement of Armenian refugees under the League of Nations Commission for Refugees in cooperation with the French High Commissioner. 700 hectares of unoccupied but arable jiftlik land and 1300 of pasturage, and the fountain of 'Ain Klâb, which the High Commissioner had inherited from the Sultan by the terms of the Treaty of Versailles, were devoted to the settlement of fifty young couples from the refugee camps, or slums, of Aleppo and Beirut. They erected the village of "Moushashen" meaning "built by the people of Moush"—a village in Armenia. One-room concrete houses supplemented with stables were constructed on a windy saddleback of a foot-hill. Each family was given a few head of cattle, seed, tools, and a subsidy of a few piasters a day till the crops should make them self-supporting and eventually perhaps able to pay back the debt. With bad crops and necessity of further help the debt had mounted to

500 pounds Syrian per family in 1931, according to the mukhtâr. (1 pound equals 20 French francs).

The people selected were often city dwellers who did not adjust to the rural life and pioneering hardships. The turnover of families returning to the fleshpots of the city was fourteen out of forty six during the two years' interval of this experiment, April 1931 to April 1933. But those remaining are by natural and human selection the ones better fitted to the life. On the whole the settlement is thriving. The cattle have greatly increased, irrigated gardens, vineyards, and over 20,000 fruit and other trees have been planted. Excellent relations of trade and friendship have been established with the Arabic-speaking neighbors.

f. *Near East Foundation.* Previously, at least one settlement had failed dismally on account of malaria. Many of the settlers had chronic malaria, and the change of environment coupled with the marshy Orontes nearby threatened another failure here. Accordingly, arrangements were made with the Near East Foundation to guard the health of the village of Moushashen with a travelling clinic. The Foundation undertook the work with the understanding that :

1. It would be a demonstration and eventually would become either government-supported, self-sustaining, or unnecessary.
2. It would include the Arab neighbors in its clientele in order to build up inter-racial good will and keep the Armenian immigrants from becoming bitterly hated.
3. It would expand from health and hygiene to include agriculture, recreation, welfare of women and children, and improvement of all phases of village life in an integrated attack as soon as resources might permit.

An itinerant clinic, housed at first in an ambulance, and presided over by Miss Annie E. Slack, R.N., explored the situation in the summer and fall of 1930, and started regular work in April 1931 after the winter rains, when the roads had again become passable for automobiles.

g. *Department of Sociology.* This clinic furnished the situation needed for the controlled experiment on village hygiene which the Department of Sociology of the American University of Beirut wanted for its research objective of developing methods for measuring social forces. The Department had been active in developing the Near East Foundation

projects in Syria as a form of University Extension in the field of social work. Arrangements were made for the Department of Sociology to undertake the scientific aspects of the experiment in planning the controls and measuring the phenomena, while the Near East Foundation Clinic undertook the welfare aspects in educating the experimental village (Jib Ramli) and the demonstration village (Moushashen).

4. *Economic situation.*

(Part II, A, 4)

Turning from this review of the historic background relevant to this study, the present economic conditions should be summarized since they are a major factor conditioning hygienic status.

a. *Income.* The region is purely agricultural and pastoral. The life of the people and their income center around cereals and flocks. Wheat predominates with barley, maize and lentils, as minor crops. Except for onion patches almost no vegetable plots are found. As one farmer expressed it, "We? Plant vegetables? Never, by God! We are farmers (fellaheen)!" Except for figs, grapes and melons in season and greens from wild weeds in the spring their diet is monotonously and exclusively of wheat products and leban (a soured milk culture).⁴ The Armenian village alone grows vegetables and enjoys a more varied diet.

In 1929 the villages, excepting Dayr Shmayl in the foothills, were treeless. Moushashen had not one tree, Jib Ramli had two forlorn little ones, Dîmu and Assîlî had none in evidence, and Hanjur had only one little orchard for the landlord. By 1933 Moushashen had planted 23,000 trees. El-Moustashâr had rounded up Jib Ramli with gendarmes and compelled its people to lay out a fig orchard with a row for every family. To this the villagers' predominant attitude was, "What a waste of effort! God has ordained that figs are the one fruit that will never prosper in our village".

Goats and sheep and small herds of cows rank after cereals as the chief sources of income. Goat's hair is spun and woven by the women for cloaks, tents for the Bedouin, etc., and the

4. Another comment in Sluki which suggests the meagerness of their diet (among other attitudes) was: "Why all this writing and many questions? If you want a report to the society that sends us the clinic, the matter is simple. All that need be said is, 'We have here a group of people living on a hill. For two months we have figs and for ten months we eat only wheat. What we most need is a doctor, a teacher, and a priest.' Finished. That is enough."

wool for other clothing. Chickens are producers of pocket money for the women. The eggs are the women's property and are exchanged by the village peddler for such articles as cakes of soap (1 cake equals 2 eggs); cloth to clothe herself and the children; all manner of household articles (mostly made of kerosene tins); shoes (often cut from old automobile tires); charms against the evil eye; bracelets and powder (koehl) for the eyes. Some peasants get a little income from hiring their donkeys out for transportation. A few camels and horses exist, but rapidly the automobile is transporting most of the travellers that do not walk on their own feet.

Minor sources of income are from hiring out to the wealthier peasants or the landlords at wages varying from ten to fifty Syrian piasters at harvest time. Gatherers of licorice root earn five piasters a day, or, if stronger, seven piasters a day in winter when there is no other work. Work on roads is usually paid by a bookkeeping credit towards the P.L.S. 125.⁵ annual per capita road tax. Widows support themselves weaving reed mats. A landlord operates a small cheese factory in Assîlî.

The range and frequency of village occupations is:

Fellah (literally "plowman") on shares	75 %
Hired man (fellah on wages)	8 %
Peddler or shop keeper (part time)	12 %
Shepherd	2 %
Sheikh (mukhtâr)	3 %

One village had a widow who was a dressmaker, and Moushashen had a watchman for the crops and a carpenter-mason-druggist-jack-of-all-trades.

The average standard of living is roughly estimated as the equivalent of a cash income of one hundred Syrian pounds a year (about \$80 normally). The estimate is based on records of the three year average of the total crops on the threshing floors in Jib Ramli, plus the recorded number and increment of the flocks, plus a guess as to the peddlers' profits, etc. It may easily be fifty pounds in error. It may vary even more than that depending on the crops in a particular year.⁶

b. *Land tenure.* The privately owned villages in this study are the property of absentee landlords living in the city

⁵ The Libano-Syrian piaster (P.L.S.) is normally equal to .8 of a cent.

⁶ Cf. "Economic Organization of Syria", Chapter 13, on "Standards of Living". American University of Beirut, Social Science Series. No. 10 (In preparation).

of Hama in the neighboring State of Syria. They visit the villages periodically and live in them through the harvest season to insure collection of their share (40% of the gross crop is a representative landlord's share). All villagers are tenants whether peddlers or farmers or sheikhs. In Assîli half the village are house-dwellers (fellaheen) and half are Bedouin tent-dwellers ("el-Arab") who are in process of changing from a nomadic, pastoral life to a settled agricultural one. They own their own tents and are generally more independent, seldom working land in one locality for more than one year. The turnover of these Bedouin tenants by migration may be 100% a year at times.

In Sluki and Jib Ramli the Government collects a special rent tax. This is considered as a payment towards buying the land, so that eventually the peasants will own it outright. Consequently, there is little emigration. It was 3% a year between 1931 and 1932 compared with 37% in Assîli, Hanjur and Dîmu, and 14% in Moushashen.

c. *Taxation.* The rent tax averaged 927 Syrian piasters per family operating land in Jib Ramli in 1932. The tithe of 12.5% from Ottoman days is now fixed in cash as $\frac{1}{8}$ of the average crops of 1927 to 1929. As the prices of agricultural products have fallen this has resulted in greatly increasing the tax and requiring remissions by the Government. The "agham" or cattle tax, is theoretically P.L.S. 40 a head. Actually the amount of this tax yielded by each village in those three years is set as its quota and this is divided by the mukhtâr over whatever number of livestock there are in a given year, so the per capita tax may vary from 40 P.L.S. in any year.

In all the villages the road tax on males from 18-60 years of age is collected in cash or labor; the "agham" tax is collected from the peasant directly; the tithe is deducted from the landlord's share in the privately owned village and is collected directly from the peasants in the government-owned villages; and the rent tax is collected only in the latter. In the case of Moushashen the local government deals very largely through the Commissioner for Refugees. The average total cash tax paid per family⁷ in Jib Ramli in 1932 was P.L.S. 1834 and in Assîli, Hanjur, and Dîmu was P.L.S. 1827.

7. Some families are exempt if they have no land, and the males are too young or too old to work on roads, or if the household is a widow without adult males, etc. A few families are composites, as under the patriarchal family system several

d. *Debts.* In the privately-owned villages debts are large and the money lenders' rates are usurious, running up to 50% a year. No exact data was collected on this.⁸ The high turnover of the population is partly a result of rural bankruptcy. The peasant is mulcted by the money lender on the threshing floor. With whatever he can save or secrete, if his debts are still overwhelming, he leaves, hoping to escape by starting afresh in some distant village with equipment loaned by another landlord.

Obviously peasants with such a low standard of living and so heavily in debt are enormously handicapped in taking any steps towards better hygiene. The interrelation of wealth and health is an urgent problem in studying either one.

e. *Housing.* Mud brick is the predominant building material. Even the four villages built on rocky hillsides use more mud than stone. Moushashen alone has half its constructions of concrete financed by the League of Nations' loans. In fifteen to thirty years a mud house if not constantly repaired collapses. The timber is salvaged, the ruins leveled, and a new dwelling is built on top without foundations, thus raising the mound another two feet or so. The floors are mud. The ceilings have crude poles overlaid with reeds or reed matting and then about sixty centimeters of rolled earth. Dîmu houses are partly underground with roofs thatched with reeds. Assîli has many underground cave houses—into which rain water runs, in which filthy stagnant pools collect, mosquitoes breed, and light, air and sanitation are things unknown.

Windows are non-existent in the Arab villages, but they are full-sized in Moushashen as its houses were built by city people. Most Arab rooms are in darkness except when the door is open or a half dozen pigeon holes, each about ten centimeters in diameter, are unplugged in summer time. The cattle of over half the homes sleep in the same room with the family in winter to warm the family and to be safe from thieves. The

married brothers may live and work together paying land and cattle taxes as one unit.

In 1931 the average total tax per family was P.L.S. 2600. In 1932 the average tax per person was lower. This is reported to be due to emergency remissions necessitated by the generally poor crops and the lowered prices of crops which made the rate, which was based on the years 1927-29, unfair.

8. An illuminating comment from one peasant was "You have turned us inside out with questions, but the most important one of all you haven't asked. One that worries us day and night and makes us grow old early is, 'How many debts have you?'"

door yards are miry and full of manure in winter with dust and flies replacing the mire in summer. Drying dung cakes plaster the walls of every house, court, and stable. Furniture is simple. The characteristic outfit is a chest, a pile of bedding, three copper cooking vessels, an oil-tin pail, baskets, earthen jars, farming tools, a cradle, a reed mat or two, and the clay-on-wicker mouse-proof bins for grain. The census of every house revealed not a single table or chair in the Arab villages. All household work is done squatting on the floor. There is not a single water closet of any sort in either the Arab or Armenian houses as everyone goes out to the fields on rising before dawn—except the children who respond to nature in the courtyard or anywhere they happen to be.

5. Religious situation.

(Part II, A, 5)

The Armenians of Moushashen are Christians belonging to the Armenian Gregorian Church. The Arab villages are Alaouites⁹ or believers in the Imam Ali. They are of the Nusairiyyah sect, an offshoot of the Shiite Moslems. Dimu and the Bedouins of Assîli are Sunnite Moslems. There are a few families of Sun and Moon worshippers.¹⁰ The one Christian in Jib Ramli is a widow who is indistinguishable from her Alaouite neighbors in general customs and culture except that she is a little richer and cleaner than most.

The Nusairiyyah religion does not seem to be a dominant force in their lives. Few pray. There is no mosque nor sheikh. There is a minimum of outward ceremony or organization, or inward meditation in theological patterns. The few literate men of the village are just as willing to read the Bible as the Koran.¹¹ Religion is chiefly a caste into which one is born and which involves belief in God along with Muhammad and a host of jinns or afrits and minor superstitions. All that happens to them in life, whether good or ill, is from God. This mild fatalism is not resistive to bestirring themselves if some real desire (such as for crops, or for boy babies to live) is appealed to. It is rather a philosophy bred of complete ignorance

9. For fuller discussion see Bliss, Fred. J. *The Religions of Modern Syria and Palestine*, Scribner, 1912 pp. 354.

10. The moon ranks as first divinity as Ali is believed to have gone there upon dying. The sun is second as the giver of warmth and crops.

11. Sheikh Hatim, the mukhtâr of Jib Ramli, spontaneously asked for a copy of the Bible as his copy had the Pentateuch missing. He and one or two enjoyed reading aloud together from the Koran or the Bible occasionally, and proved his statement with quotations. The only son of the ex-Sheikh is named Jesus.

and absence of vision in the possibility or ways of improving their lot. The shrines or tombs of legendary saints are resorted to in times of sickness, or on feast days, and forgotten otherwise.

6. Domestic situation.

(Part II, A, 6)

Among these Arab villages the woman "has no soul." She is not even "an Alaouite" until she is married. Her lot in life is to please her husband, to be a bearer of children, a drawer of water, a maker of dung cakes, a baker of bread, and a tender of livestock. She goes about unveiled, though she may hold the corner of her head kerchief in her mouth. She is never literate. Wives are bought at an average price of twelve gold pounds (about \$53). Primarily, ability as a worker, and secondarily, looks, are considered by the two appraisers who are appointed by each of the two families to settle the price. This custom requires capital and postpones the man's age of marrying.¹² The average age of marriage was found to be 26 for men and 19 for women, but these are approximate only, as age data are unreliable. It probably indicates that all girls are married off before twenty and men later. The average number of wives is 1.2 and 20% of the households were found to be polygynous. As the sexes are even, this is only possible in a society where every individual marries, by means of a social device, which keeps men unmarried till a later age than that at which girls marry. Evidence of this condition is that several villages showed a frequency of bachelors equal to the frequency of polygynous males. Although divorce is dependent only on the man's wish, yet there is little of it as marriage is a mutually necessary economic partnership, even more than it is a biological or spiritual relationship.¹³

In the Arab villages the babies are born with the help of women neighbors. Usually the babies are walking at one year and imbibing all that comes to hand. Half of them die before reaching two years of age, as the exposure is too sudden for the process of developing the necessary immunities to keep pace

12. Sometimes families trade women to escape the purchase price; thus No. 7 in Jib Ramli had traded his sister for a wife and No. 25 had traded his two young daughters for a second wife for himself.

13. Some illuminating comments recorded as notes on the schedules from information volunteered by husbands are: Dimu, Family No. 4, "Husband beats his wife daily to make her work". Jib Ramli, Family No. 10, "Husband beats his wife any time she gives him trouble"; No. 19 reports beating "four times a month, but cursing oftener"; while No. 22 finds the golden mean in beating his wife "once a month." A wife in a Bikâ' village was found by the surveyor with a freshly broken rib from a beating, but this was obviously an extreme case for the government had interfered.

with the intensity of exposure. The babies are weaned directly onto adult diet, though often the mother will chew it up and soften it with her saliva first. Often a child will be nursed up to three or four years of age. The great lifesavers are the fact that every mother can nurse her baby amply¹⁴ and that the sunlight is so abundant in rural Syria.¹⁵

In the Armenian village the woman's status is much higher. But even here in many households she may not speak in the presence of her husband's relatives. Often this is so literally obeyed that she will not answer a stranger's question or utter a word for days on end.

7. *Educational situation.* (Part II, A, 7)

As the toddling child grows he will be carried about all day on the hip or back of the older sister—often only a child of eight herself. The village children are dressed as little adults. Their occupation is chiefly hanging around and picking up the adults' culture by absorption. Two or three of the sons of the sheikhs or peasants who can afford it are sent to a sheikh in some village to be taught to read and recite the Koran. The fee may be ten silver piasters a month. Obviously teaching is a part time occupation. The teacher must supplement his income as one teacher there does by washing corpses and doing odd jobs.

No census of literacy was taken. It is estimated that from 5% to 10% of the men are slightly literate, but no woman who could read was found. As the mukhtâr has to be able to read the government orders it is sometimes necessary to appoint someone from another village. The above applies to the Arab villages. The Armenians of Moushashen come more from the cities in Turkey where mission and other schools have resulted in a literacy of over 80% for the men, and perhaps 50% for the women. As to mental ability no measurements with intelligence tests were made. Subjective impressions indicate a range from children of probably superior IQs down to the village fool, a feeble minded individual. Two adults who could not count beyond 10 were observed.

14. The surveyors found twins nursing simultaneously at both breasts. Often there is milk left after a feeding. Thus one mother's attention was called to the flies on the baby's eyes and the need of washing, whereupon she squirted milk from her breast onto it—thereby causing the flies to cluster more thickly around the eyes than before.

15. About 300 days in the year are completely rainless and cloudless.

8. *Recreational situation.* (Part II, A, 8)

For recreation the village seems to offer little to the eyes of the urbanite. But recreation is relative to what one is accustomed to and expects. The annual feast days are colorful and exciting. The tombs of legendary saints become centers for the annual feast of the Alaouites where all the villagers gather in their newest clothes and watch the javelin play, indulge the children in merry-go-rounds and vast quantities of sweetmeats, and dance folk dances ("debkis"). In these the sexes dance separately and together for five hours at a stretch.

An annual walk into Hama with produce to sell, sleeping by the roadside en route, is a major event even for a man and more so for the wife or children if they are taken along. Neither games nor simple forms of organized play such as "hide and go seek" or "tag", were found. There was not one ball of any kind in the villages in this study. These villages are not more than a half hour's walk apart and visiting is frequent. In fact, conversation, news, or gossip, is the chief form of recreation among both the women and the men. One sees the men squatting under their cloaks on the village mound or in a gateway discussing crops and cattle, or the women loitering by the well or chattering busily in groups while molding dung cakes. As a result, the social control from public opinion is very strong. Everyone knows everyone else and all his business. Even though emigration may be a socially disintegrating force, it is more than offset by this vigorous and all pervasive public opinion.

In the last year or two automobiles came through several times a week. The chauffeurs while waiting for passengers bring news from wider horizons. A magic lantern lecture is a topic for reminiscing on each picture for six months. It becomes a date of reference, as for the peasant who remarked to a surveyor "our last baby died in the winter of the spring when the man with the pictures came to us."

9. *A natural area.* (Part II, A, 9)

In sum, this group of seven villages is the heart of a small natural area or region. On the north the Orontes river makes a definite boundary. There are only one or two fords and but one bridge, (Jisr 'Asharni) in a stretch of over fifty kilometers. Many peasants living on its banks have never crossed it. On the west the mountains rise

sharply with the few villages in the tributary ravines leading out to the plain. On the south is a stretch of barren rocky hills with Masyaf as the nearest village—at a distance seven or eight times that between the villages in this group. On the east the ground is a barren, rocky upland with villages few and far between. Their inhabitants are no longer Alaouites but Sunnites with the one Greek Orthodox town of Mhardi among them. Their traffic is exclusively eastward to Hama. They are outside of the political district of Masyaf and even of the Alaouite State (now the "Government of Latakia"). To the south the folk are Isma'iliyyah and not Nusairiyyah exclusively.

To these seven villages might be added a few others on the fringe, most of them hamlets of less than twenty families each—such as Kanfu, Jlaymi, Akerbi, Sarmiah and the larger village of Tel Salhab. These constitute a somewhat natural unit region with far more internal than external contacts.

10. *Bikâ' sample.*

(Part II, A, 10)

In addition to the seven Masyaf villages three villages comprising eighty five families of 436 individuals in another part of Syria were surveyed in order to see how much difference there might be, and so test a little the representativeness of our sample.¹⁶ A similar type of plains village dependent on cereal culture was chosen in the Lebanese Republic in the Bikâ' plain which lies between the Lebanon and the Anti-Lebanon mountain ranges. The three villages of Kafr Dan,¹⁷ Kafr Dabsh¹⁸ and Hawsh Isnayd¹⁹ lie a few kilometers to the west of the Baalbec-Zahleh road and railroad and about twenty five kilometers southwest from Baalbec.

Geographically the conditions are similar to the Masyaf villages except for a higher altitude of about 3500 feet. Kafr Dan has water only in winter. In summer the women have to go to Nebi Rishadi a couple of kilometers distant for water.

16. Representativeness of sampling was further tested by some schedules from village and town families in Egypt (near Cairo and Assuan), in Iraq (near Baghdad), in Persia, Turkey, Palestine and the Lebanon. The individual schedules were analyzed and compared. It was found that the type of culture—plains village, mountain town or capital city—made far more difference than the country in the Near East. The hygienic life of peasants throughout the Near East could be measured by the scale which is covered by this schedule.

17. Literally "village of Dan".

18. Literally "village of loose stone walls".

19. Literally "courtyard with seats".

Kafr Dabsh has a well and Hawsh Isnayd has an ample spring—and malaria!

Historically, these villages have been more closely under the control of the central government than were the more remote Alaouite villages. The French occupation followed the Turkish retreat after a short interregnum of British occupation. The government became partially autonomous with the establishment of the Lebanese Republic in 1926. For a fuller description of the local government of these villages consult "Municipal Government in the Lebanon."²⁰

The economic conditions are very similar except that access to markets is easier. The casual visitor would find few differences in land tenure, taxation, debts, or housing.

Demographically the birth rate was 37 (P.E.=6) and the death rate 53 (P.E.=8). Malaria is reported to be very severe. This accounts for the sterility and a birth rate lower than the death rate. These villages are slowly dying out. The population are all Metwalli, a Shiite sect of Islam. The description given above for the domestic, educational, and recreational aspects of the culture of the Alaouite villages applies in general to these Bikâ' villages also.

11. *The village unit.*

(Part II, A, 11)

Before leaving the description of the rural for the urban samples there remains to note that the village here in the Near East is a complete self-contained community. Its houses are all built touching, if not overlapping one another. Occasionally it will have a wall around the village. Often the houses are one continuous structure, around a central square and with no doors or windows to the outside. There are no houses whatever between villages. The lone farmstead of the west does not exist. Only nomads in tents live outside a village and these usually on its outskirts in this region. With villages ranging from ten to two hundred families, they all know each other. Their culture is highly homogeneous. Village pride and loyalty are evident. They may marry outside, but the woman is known for life thereafter as "she, of such and such a village." National consciousness is

20. Ritscher, Walter H. *Municipal Government in the Lebanon*. Social Science Series, No. 3. Publications of the American University of Beirut, Syria, 1932, pp. 47.

unknown—they do not think of themselves as "Syrian." They are conscious only of village loyalty and of religious-racial loyalty (as being all Alaouites together).

These facts make the village the ideal unit for a sociological investigation. It is even more sharply defined than the family which, under the patriarchal system, often ramifies very confusingly.

12. *The urban sample.* (Part II, A, 12)

For comparison with the rural village samples in this experiment a city sample of fifty families with 326 individuals was surveyed. The essential characteristics of the homogeneous peasant group are brought out in relief when contrasted with the city folk of the same race and country. Furthermore as all correlations are dependent on the standard deviation of the cases entering into their calculation, it is well to study the interrelation of culture traits and culture patterns such as these hygienic items in two different ranges. The rural range of variation (measured by the standard deviation of its scores) is small. It increases three times on adding in the city sample. This increases all correlations and facilitates the detecting of interrelations, or the structure of the culture complexes.²¹

The urban sample was selected in Beirut, the chief port of Syria, from the upper class of a residential section (Ras Beirut). It is a sample of educated, highly prosperous Syrians containing a cabinet minister and many professional men. In general it was chosen to represent the opposite extreme of Syrian society from the Alaouite "fellaheen".

The sample shows an abnormally low death rate. But the large probable error of this rate shows it to be undependable,

21. The culture of a people is conceived as the sum total of its ways of thinking and doing. Its elements are, subjectively, culture *traits* which are objectively expressed as culture *patterns*. They integrate into culture *complexes*. (See Bogardus E. Contemporary Sociology, University of Southern California Press, 1932, p. 68 ff). What is viewed as a pattern and what as a complex is still somewhat relative and unstandardized in anthropology and sociology. In this study any one of the individual questions No. 22-No. 77 of Form B are considered as patterns, e.g. what they do for malaria, No. 22, what they know of the breeding places of flies, No. 58, or what degree of light and air they have in their houses, No. 69. Each of the five sections averaging eleven questions is here considered a culture complex, e.g. Remedies in Sickness, Section II, Infant Hygiene, Section III, etc. From a wider point of view the whole scale of hygiene is a larger culture complex and a component of the total culture of these peasants.

as any vital statistician would cordially agree from the small size of the population. There were only three deaths reported for the preceding two year period among the fifty families—a crude rate of 4.7 per 1000. Of course this may not be a random fluctuation of sampling, but may be due to a psychological factor of withholding information about deaths. Again it might be a representative fact in such a highly selected group. The birth rate was 83 per 1000—with a probable error of 21.²² No conclusions should be drawn from this fact. On other evidence, it is believed that both the death rate and the birth rate in such an urban group are much lower than in the villages. Sanitation is good and contraceptives are in use in spite of laws against them. Excellent free medical service and hospitalization exist in the center of the quarter.

A more exact statement of the economic status of this group is that its average annual income was estimated²³ as 1966 Syrian pounds (about \$1550 in 1932). This is about thirteen times the average rural income. The range and relative frequency of occupations of the sixty-four gainfully employed members of these families was :

Merchant	15
"Office" (clerk)	8
Teacher	7
Carpenter	4
Goldsmith	4
Doctor	4
Landlord	3
Restaurant keeper	3
Lawyer	2
Engineer	2
Government official	2
Dressmaker	2
Builder (contractor)	2
Sheikh	1
Pharmacist	1
Shoemaker	1
Priest	1
Tailor	1
Editor	1

The prevailing type of house is stone or reinforced concrete with tiled floors and calcimining over plaster on the walls.

22. For further details on their estimation, see Part II, B, 1.

23. For further details on their estimation, see Part I, B, 3, b.

Gardens are frequent. All the houses but one have water closets, mostly water-flushed. There is little screening from mosquitoes. Excellent piped water supplies every house and electricity serves most of them.

The group are mostly Greek Orthodox with a sprinkling of other Christian sects and Moslems. All the men and many of the women are literate as schools for all groups abound in Beirut.

B. Comparative Rural-Urban Distributions of Hygiene Data. (Part II, B)

In the following graphs the hygienic culture patterns are exposed for three of the eleven population samples studied. The rural conditions are represented by 100 Alaouite families considered to be "normal" and uninstructed in hygiene. These were the 40 of the Control, "c", sample and the 60 of the "b" sample, surveyed with Form B in April 1933. The families are identified by two digit numbers (No. 1,2,3, 99,100 = 01,02,03, 99,00). Roman type signifies that the informant gave an affirmative answer; italic type signifies a "partially affirmative" answer (i.e., "we do it if we have the medicine," or "usually", "sometimes" etc). Families whose numbers do not appear on the graph are those who answered negatively (or, in a few cases, where the data was lacking).

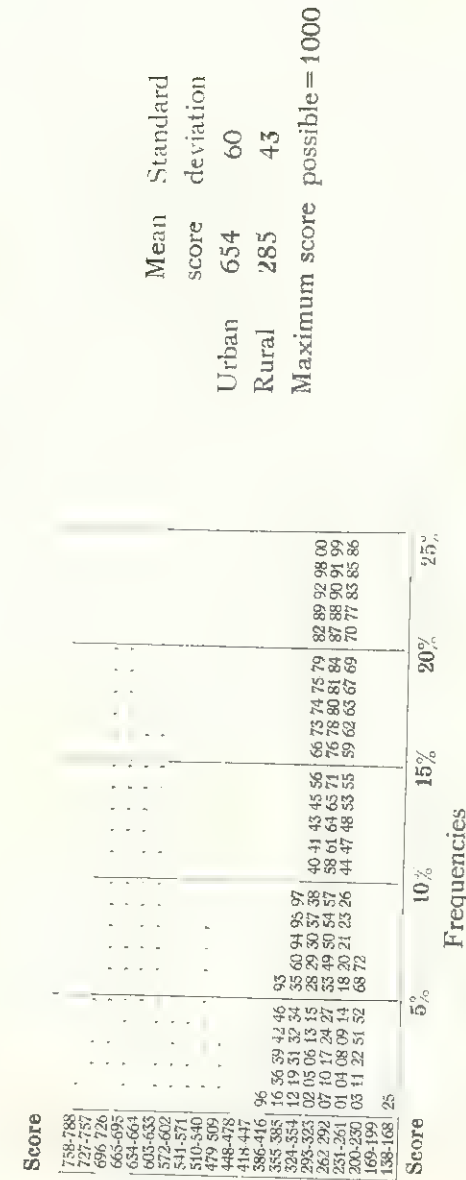
For comparison of the other extreme of Syrian society, the well-to-do, educated, urban sample "U" of 50 families is superimposed. These were surveyed with Form A schedules in 1931. The data were copied later onto Form B schedules, which were scored by the Form B weighting system so as to be comparable with rural data. Each case is indicated by two commas.

Where the cases in the graphs are families (questions No. 22-77) each of the 50 cases is given the space of two of the 100 rural cases. The result is that each unit of the graph, i.e. the space for a two digit number, represents 1% of the population in each of the two samples. Each category is usually divided into two rows in order to get all the entries onto the printed page. Decile lines are indicated to facilitate interpretation in percentile terms. On some graphs where the urban data are not strictly comparable (due to differences in Form A and Form B) they are omitted. On a few graphs the number of families is less than the full number in the sample studied due to the rejection of cases with incomplete or question-marked data.

Table 8

DISTRIBUTION OF SCALE SCORES

In the "normal" rural Arab sample (N = 100) (Families identified by number)
Compared with the urban sample (N = 50) (Each family indicated by two commas)



The rural and the urban groups are completely separate. There is not one case of overlap! The rural mean is 28.5% of a perfect score, while the urban figure is 65.4%—well over twice as high a hygienic status.
The rural sample is a homogeneous one of Alaouites. Its standard deviation (43 points) is about one third that of the more heterogeneous "standard" rural range (SD = 120 points)

Table 9

DISTRIBUTIONS OF SCORES OF SECTION II

Remedies for Sickness

In the "normal" rural Arab sample ($N = 100$) (Families identified by number)
Compared with the urban sample ($N = 50$) (Each family indicated by two commas)

Score	Frequencies			
	5°	10°	15°	20°
130-142	.	.	.	.
129-135	.	.	.	.
122-128	.	.	.	.
115-121	.	.	.	.
108-114	.	.	.	.
101-107	.	.	.	.
94-100	.	.	.	.
87-93	.	.	.	.
80-86	.	.	.	.
73-79	.	.	.	.
66-72	16.35	36.95	60	
59-65	06.45	46.76	94	
52-58	06.15	54.38	45	
45-51	02.12	30.51	42	
38-44	07.08	14.15	19	
31-37	10.27	29.82	37	
24-30	09.17	20.22	23	
17-23	01.04	18.21	59	
10-16	03.11			
		96.97		
		56.66		
		47.53	55.79	85.89
		26.28	33.40	41
		48.50	38.67	68
		34.37	10.29	72
		24.25	44.51	94
		61.62		
		63.64	72.73	77
		80.81	83.87	91
		78.82	86.88	92
				98.99

Table 10

DISTRIBUTION OF SCORES OF SECTION III

Infant Hygiene

In the "normal" rural Arab sample (N = 100) (Families identified by number)
Compared with the urban sample (N = 50) (Each family indicated by two commas)

Score	Frequencies					Urban
	5%	10%	15%	20%	25%	
191-197						
184-190						
177-183						
170-176						
163-169						
156-162						
149-155						
142-148						
135-141						
128-134						
121-127						
114-120						
107-113	12, 71, 75					
100-106	39, 73, 74, 89, 96					
93-99	02, 19, 24, 30, 37	42, 58, 78, 79, 81				
86-92	05, 09, 16, 31, 34	35, 36, 41, 50, 57	76, 84, 86, 90, 93	94		
79-85	06, 07, 13, 15, 17	18, 25, 27, 28, 43	44, 56, 64, 77, 80	82, 87, 88, 91		
72-78	05, 04, 08, 10, 11	20, 21, 22, 29, 32	59, 62, 65, 66, 69	70, 72, 92, 95, 97	98	
65-71	01, 14, 23, 26, 46	48, 61, 65, 67, 67				
58-64	68, 83					
51-57	38, 40, 48, 85					
44-50	47, 00					
37-43						
30-36	52, 55					

Table 11

DISTRIBUTION OF SCORE OF SECTION IV

Food and Cleanliness

In the "normal" rural Arab sample (N = 100) (Families identified by number)
Compared with the urban sample (N = 50) (Each family indicated by two commas)

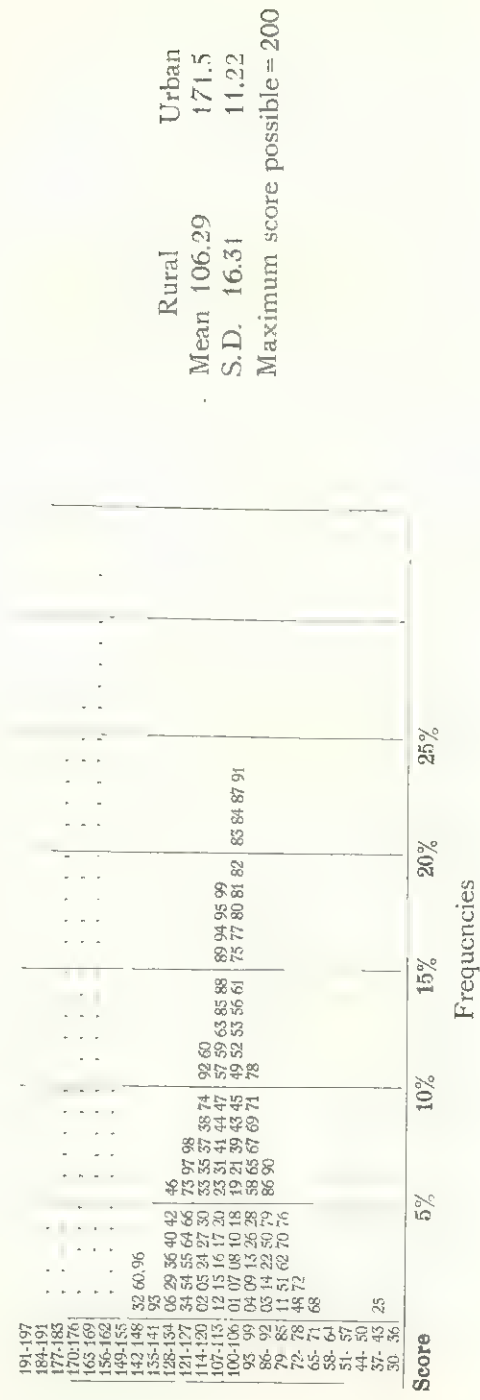


Table 12

DISTRIBUTIONS OF SCORES OF SECTION V

Insects

In the "normal" rural Sample (N = 100) (families identified by number)
Compared with the urban Sample (N = 50) (each family indicated by two commas)

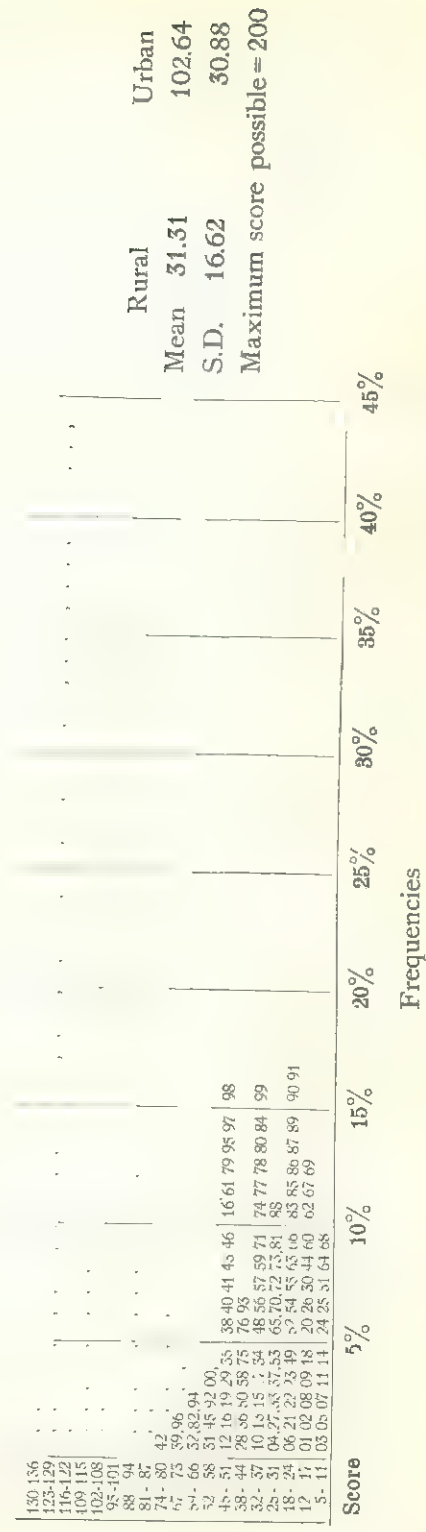
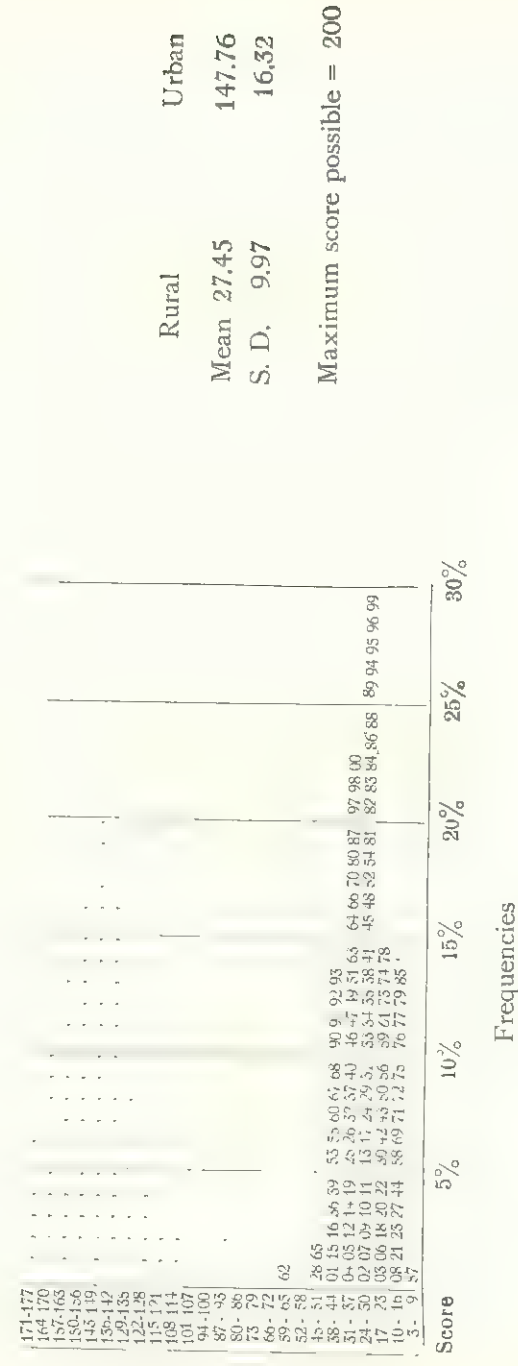


Table 13

DISTRIBUTIONS OF SCORES OF SECTION VI

Housing

In the "normal" rural Arab sample (N = 100) (families identified by number)
Compared with the urban sample (N = 50) (each family indicated by two commas)



Rural
Mean 27.45
S. D. 9.97
Maximum score possible = 200

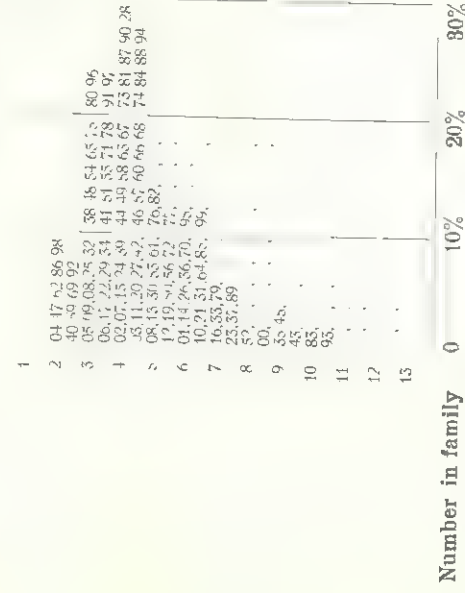
Table 14

From Section I

Vital Statistics

DISTRIBUTION OF ANSWERS TO QUESTION (No. 10) ABOUT SIZE OF FAMILY

The "normal" rural Arab sample (N = 100) (families identified by number);
Compared with the urban sample (N = 50) (each family indicated by two commas)



Average rural family = 4.5 persons
Average urban family = 6.8 persons
S.D. of urban family = 5.4
S.D. of rural family = 1.78

In spite of the patriarchal family tending to yield large households, in spite of high birth rates tending to enlarge the family, and in spite of 13% of polygynous families, the rural family here averages less than five persons, due chiefly to high infant mortality.

Note that there are no bachelors keeping house alone. Households of single persons do not exist here.

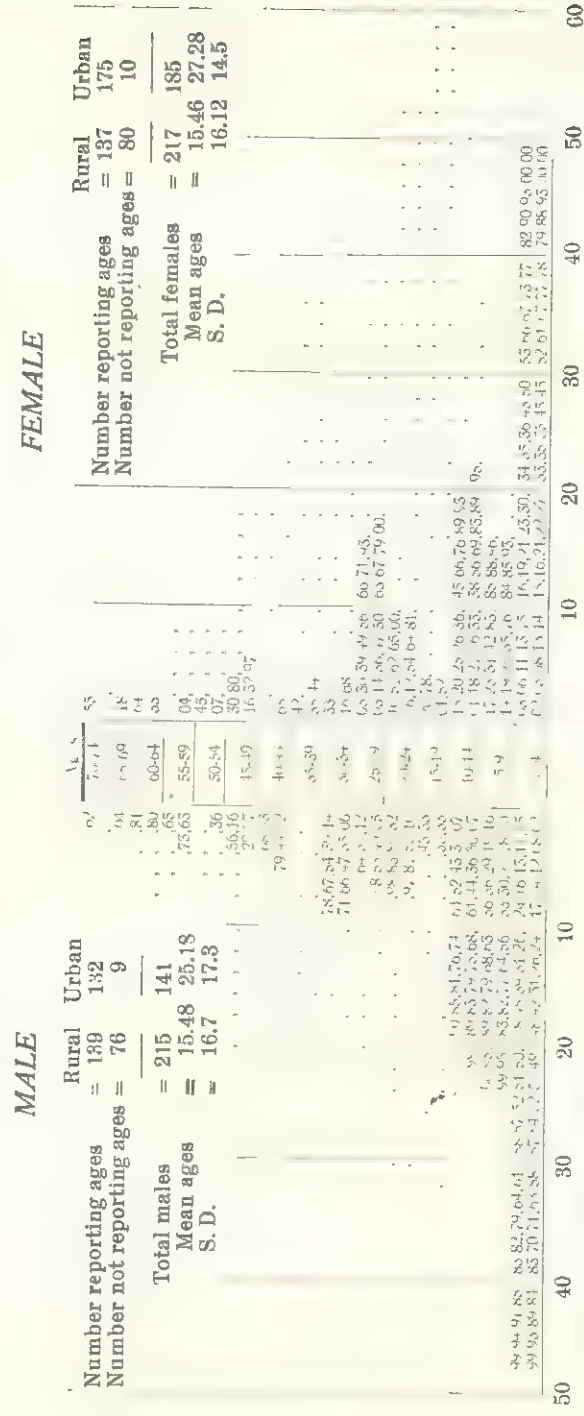
Table 15

POPULATION PYRAMID

From Section I
"Vital Statistics"

(Questions No. 10, No. 11, and No. 15)

The members of the "normal" rural Arab sample are indicated by their family numbers.
Each two commas indicate a member of the 50 urban families.



*Comment on Table 15 :

The concave shape of each rural curve (instead of a tendency for two sloping, straight lines to form a pyramid) emphasizes the high birth rate and high mortality rate of children. If a village child can reach approximately ten years of age, he has developed immunities which give him a high probability of surviving into old age.

The city families have fewer children than the rural families. In the city sample there is a larger excess of young women over young men than in the rural sample. The tendency in the villages to hide young men of military age did not go far enough to show any marked absence of them in the graph, indicating that this suspicion was not strongly operative.

The population pyramid of the Armenian refugee village ("demonstration sample") shows the characteristics of a pioneering community — excess of males, few old people, and almost no children between the ages of 12 or 20 years. Able bodied men and young couples were selected to found the refugee village and these, plus the young children who were born since the settlement was founded four years ago, constitute the population.

The average age of the rural population is fifteen and a half years and of the urban population is twenty six years.

Table 16

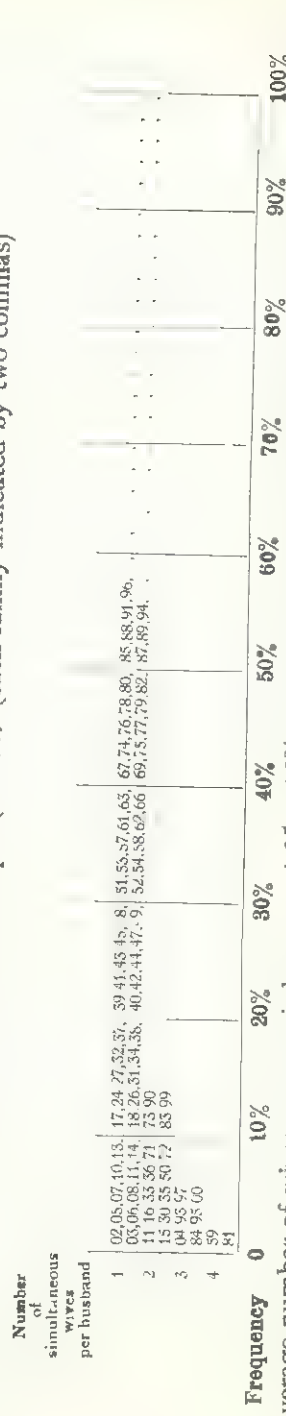
DISTRIBUTION OF ANSWERS TO QUESTION (No. 10) ABOUT

From Section I

"Vital Statistics"

POLYGYNY

The "normal" rural Arab sample (N=100) (families identified by number)
Compared with the urban sample (N=50) (each family indicated by two commas)



Average number of wives per married man = 1.25. 13% of the families are polygynous in these villages (all families are nominally Moslems). All are monogamous (Christians) in the urban sample. Among these Alaouites bachelorhood, monogyny, or polygyny are chiefly determined by income. The men tend to marry as early, and as often, as they can afford to do so.

Table 17

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 17)

From Section I
"Vital Statistics"

ABOUT NUMBER OF DEATHS (in the last two years)

In "normal" rural Arab sample of one hundred families

No. of deaths
per family

6	1	10	19	29	78	81	84
16	2	05	17	34	72	73	74
6	3	37	38				94
4	1	34					
10	7	07	30				
42	0						

$$\text{Death Rate} = \frac{42 \text{ (deaths)}}{432 \text{ (population)}} \div 2 \text{ (years)} = 49 \text{ per 1000 (PE = 7)}$$

Comment :

The crude death rate was probably high. As the sample is small the reliability of this rate is small but it is reinforced by the finding of rates varying from 50 to 70 in three other village samples. The conclusion is that it is probably fifty or greater.

AGES AT DEATH (No. 18)

Ages at Death	05	06	07	07	10	19	30	30	30	32	34	54	59	72	72	73	73	74	93	94
0-1	05	06	07	07	10	19	30	30	30	32	34	54	59	72	72	73	73	74	93	94
2-3	07	08	12	38	38	44	44	44	44											
4-5	07	08	12	38	38	44	44	44	44											
6-7	07	08	12	38	38	44	44	44	44											
8-9	07	08	12	38	38	44	44	44	44											
10-11	07	08	12	38	38	44	44	44	44											
12-13	07	08	12	38	38	44	44	44	44											
14-15	07	08	12	38	38	44	44	44	44											
16-17	07	08	12	38	38	44	44	44	44											
18-19	07	08	12	38	38	44	44	44	44											
20-21	07	08	12	38	38	44	44	44	44											
22-23	07	08	12	38	38	44	44	44	44											
24-25	07	08	12	38	38	44	44	44	44											
26-28	07	08	12	38	38	44	44	44	44											
29-30	07	08	12	38	38	44	44	44	44											
30-31	07	08	12	38	38	44	44	44	44											
32-33	07	08	12	38	38	44	44	44	44											
34-35	07	08	12	38	38	44	44	44	44											

Mean age at death = 5.47

Comment :

The average longevity of this sample, as indicated by the ages at death of the forty persons dying, is about five and a half years. A similar age was found in other rural samples. In many countries the average longevity runs from 30 to 50 years.

This means an extremely high infant mortality in these samples. Of the 81 babies born in the last two year period 20 died before twenty four months of age. The mortality of infants under 2 years in this sample is then 25% or 250 per 1000.

Table 18

BIRTHS IN THE PREVIOUS TWO YEARS (No. 20)

From Section I
"Vital Statistics"

In the "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

Recorded ages of infants from birth to 2 yrs Months	0	2	3	5	6	8	9	11	12	14	15	17	20	21	25
0-2	94	05	06	08	15	19	27	50	51	77					
3-5	07	08	12	38	38	44	44	44	44						
6-8	07	08	12	38	38	44	44	44	44						
9-11	07	08	12	38	38	44	44	44	44						
12-14	07	08	12	38	38	44	44	44	44						
15-17	07	08	12	38	38	44	44	44	44						
18-20	07	08	12	38	38	44	44	44	44						
21-25	07	08	12	38	38	44	44	44	44						

In those families reporting ages of children :

Rural	
Annual number of births	20
Population	244
Birth rate per 1000 population	82
P.E.	16

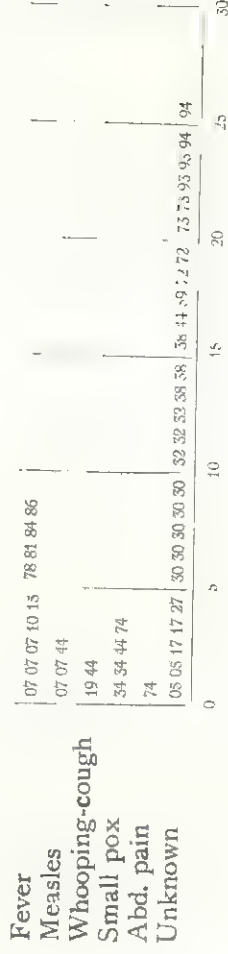
The very high birth rate has a large probable error. It can be concluded, however, that it is probably well over 50 per 1000 in this sample.

It can be concluded, however, that it is probably well over 50 per

Distribution of Answers to Questioning about

CAUSES OF DEATH (No. 19)

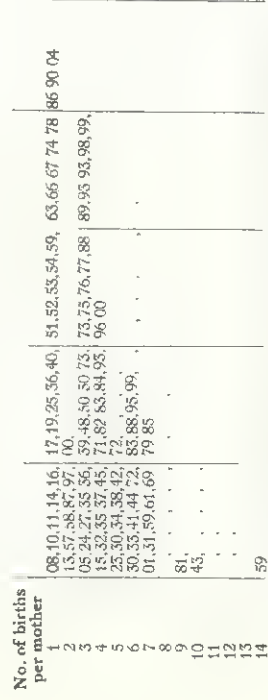
In the "normal" rural Arab sample



The causes of death in the villages are vague. The people know if fever preceded death, but most fevers are undifferentiated by them. The usual answer to questioning as to causes, is to reply "From God". Occasionally unusual beliefs come to light as in the case of one mother who alleged that her two-year-old pined away after the arrival of a new baby and finally "died of jealousy". Another child died because the father (an Armenian Gregorian) in a severe storm on the mountain had pledged its life if his were saved, as a sort of substitution to the evil spirits. He was saved and didn't remember his vow until, shortly after, the baby died. Then he recalled the vow and blamed himself for its death.

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 20) ABOUT
BIRTHS PER MOTHER

The "normal" rural Arab sample ($N = 100$) (families identified by number) compared with the urban sample ($N = 50$) (each family indicated by two commas)



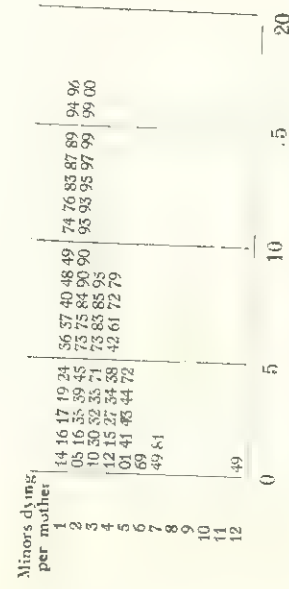
Comments:

Births here include stillbirths and abortions after six months of pregnancy, although almost all were live births. The average number of babies per mother over 45 years of age (i.e. in "completed" families) would be markedly higher than the figures above, as these include mothers of all ages.

Table 21a
From Section I
"Vital Statistics"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 21a) ABOUT
MINORS DYING

The "normal" rural Arab sample (N = 100)



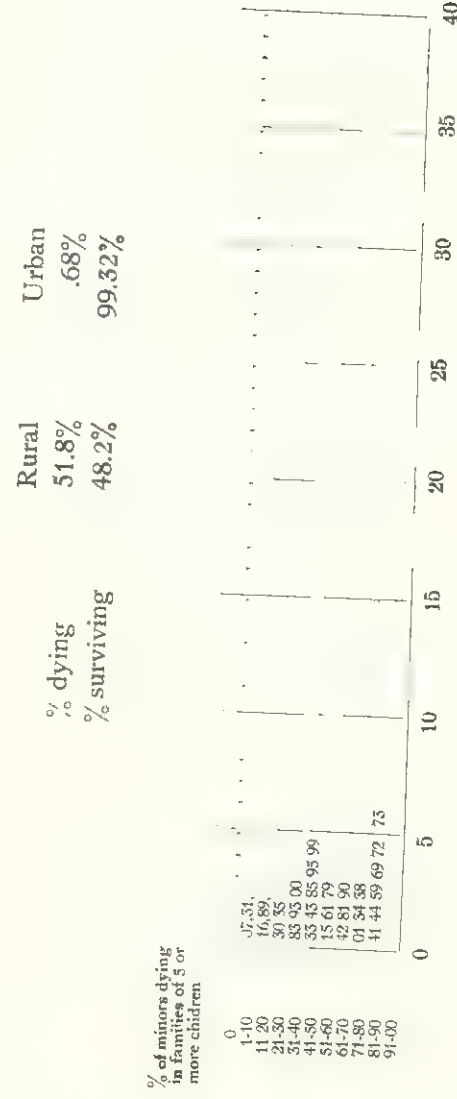
171 = number of minors dying.
61 = number of mothers.
2.74 = average loss by a village mother of minor children

Comments :

The average number of children lost by every mother is a little under three (Mean = 2.74). This tabulation gives an underestimate of the average loss of children sustained by these village mothers, for it includes mothers and children of all ages and many of the children at present alive will die before 21. It gives an idea, however, of the frequency of mothers who have lost four and five children and of unusual cases up to twelve deaths per mother.

Table 21b

MINORS DYING IN LARGER FAMILIES (No. 21b)



Rural
51.8%
48.2%

Urban
.68%
99.32%

Comment :

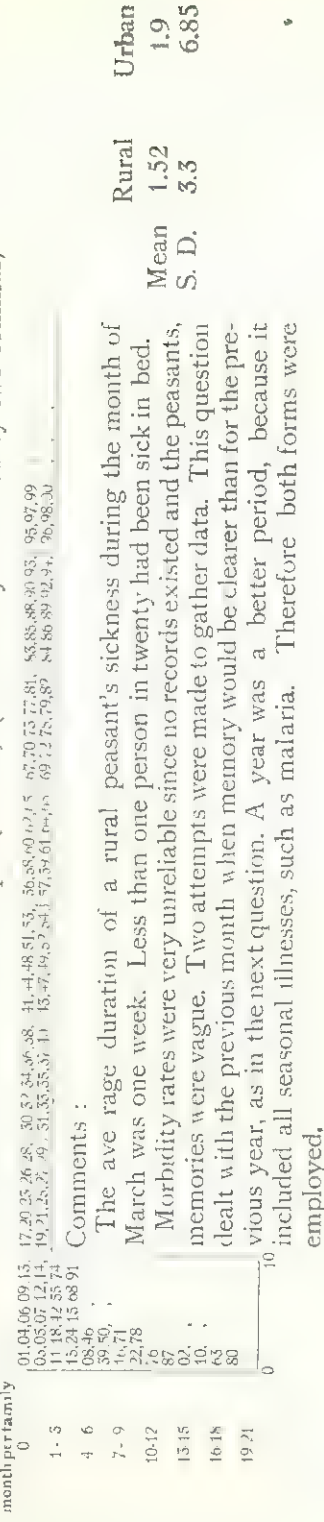
When considering mature rural families of five or more children, it was found that :

1. On the average half of them died before reaching adulthood.
2. A secondary modal point was for four fifths of them to die as minors.
3. In no families did all survive.
4. In the city sample twenty out of twenty one families showed 100% survival of minors.

Table 22
From Section I
"Vital Statistics"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 12a) ABOUT
FAMILY'S DAYS IN BED DURING PREVIOUS MONTH

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)



	Rural	Urban
Mean	1.52	1.9
S. D.	3.3	6.85

FAMILY'S DAYS IN BED DURING PRECEDING YEAR (No. 12b)

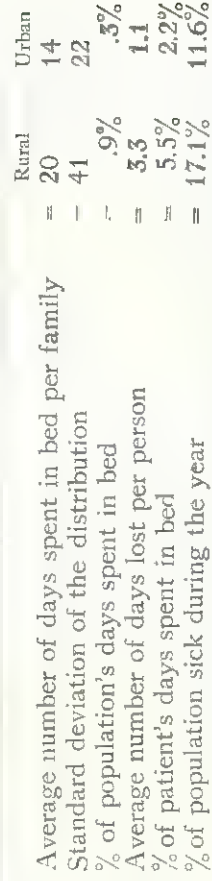
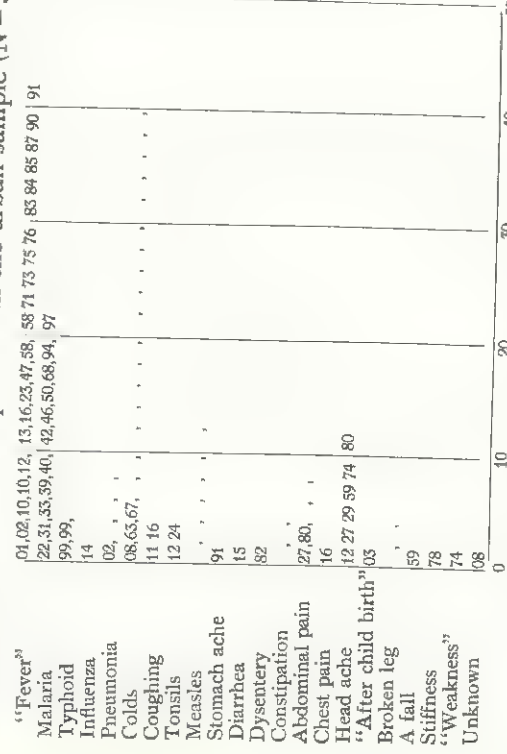


Table 23

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 13a) ABOUT INFORMANT'S DIAGNOSIS OF SICKNESS

From Section I
"Vital Statistics"

The "normal" rural Arab sample (N=100) (families identified by number) compared with the urban sample (N=50) (each family indicated by two commas)



DOCTOR'S DIAGNOSIS (No. 14)

Doctors are available in the city but not among these rural folk. Systematic medical examinations on a neighboring village (the experimental sample) showed that:

- (1) over one half the people had t achoma. (2) one third suffered from malaria. (3) one third had tenia.
- In the city sample the doctor's diagnoses were distributed as follows : 3 cases of colds ; one case each of broken leg, heart disease, malaria, typhoid, liver trouble, tonsils, constipation, measles, diarrhea, bronchitis, over weight, high blood pressure, abdominal pain.

Table 24
From Section II
"Remedies for
Sickness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 22) ABOUT MALARIA

The "normal" rural Arab sample (N = 100) (families identified by number) Maximum Score = 40
compared with the urban sample (N = 50) (each family indicated by two commas)

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Take Quinine	05 28 39 49 55; 06 30 47 55 56;	57 70 87 90 08; 66 76 86 95 73;	14 17 20 34 36; 15 19 29 35 37;	38 45 52 64 93; 43 46 54 65 97;	66 00; 97, , , , ,	100 100 100 100 100	100 100 100 100 100	100 100 100 100 100	100 100 100 100 100	100 100 100 100 100
Daily dose of 12-23 grains	96									
Keep up a points Per week										
1 "										
2 "										
3 "										
4 "										
5 "	34 36 43 46 95 35 38 45 93 97	01 39 29								
Take plasmoquine or atebrin as per Dr.										
Rest in bed	01 03 07 09 11 02 06 08 10 12	13 17 22 25 28 15 19 23 26 30	31 34 36 39 41 33 35 38 40 44	47 53 55 57 59 51 54 56 58 61	64 68 71 74 76 66 70 72 75 77	79 82 84 86 90 80 83 85 89 98	100 100 100 100 100 05 15 21 27 37	42 45 48 53 65 43 46 50 63 67	69 78 82 94 96 73 87 93 95 97	100 100 100 100 100
See a doctor	06 90 97 60 72 07 27 59 71 73	74 76 78 80 87 75 77 79 81 94								
Use a bed net	10 19 33 56 73 17 28 37 90 73	29 41 38 46								
Know mosquito is the carrier										

Comment :

It should be made clear that comments are on particular sample villages.

Only half these villagers know of quinine, while not one city-dweller was ignorant of it.

One woman remarked, "Quinine is an excellent medicine". But on being asked for what sickness it should be taken, replied, "For all diseases."

Only 15% of the villagers had any idea of continued quinine treatment to eliminate malaria.

The village peddler had quinine powder in bulk in his pack but had no idea of dosages.

No villager had heard of the new and more effective drugs used in treating malaria.

Only 14% use mosquito netting or cheesecloth protection against malaria.

Not one of these villagers was aware that mosquitoes carry malaria.

An effective way to convince them was to describe the malarial parasite as a "jinn", too small to be seen except by wise men with glasses, which rides the mos-

quito, as a man would ride a horse, to its next victim. Their fear of "jinn" is thus attached to mosquitoes and the *desire* to be freed of them is started.

Characteristic opinions as to the source of malaria are : "The alternating cold nights and warm days cause our chills and fever."

good. It gives me malaria."

The Armenian villagers depend on quinine exclusively; the Arabs use many charms

Table 26
From Section II
Remedies for
Sickness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 24) ABOUT

Maximum score = 40

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Isolate patient											
Rest in bed											
See a doctor											
Know contact as carrier											
Vaccinated											
Years ago											
1 {											
2 {											
3 {											
4 {											
5 {											
6 {											

Comments:

No villager thinks of isolation in smallpox, while a majority of these townspeople practice it. Nearly a third of the villagers appreciate that smallpox is transmitted by contact, yet its implication of isolation as desirable is either not thought out, or too difficult to practice in one room houses. Almost all in town and country alike are vaccinated—thanks to the government's campaigns. The peasants even make home-made vaccine by scratching each other and applying the fluid from patients' pustules. (The dosage is not standardized!)

Table 27
From Section II
"Remedies for
Sickness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 25) ABOUT

TYPHOID

Maximum Score = 40

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%	60%	70%	80%	90%
Isolate patient										
Use a thermometer										
Inoculated										
See a doctor										
Know diet as source										
40										

Comment:

None of the villagers know what a thermometer is; none are inoculated for typhoid or think of isolating a patient in any way; only 13% of them go to a doctor; and only one person knew that diet had any connection with typhoid. Almost all the city sample use a thermometer and consult a doctor in a case of high fever; one fifth of them appreciate the need of isolation, and a third of them are inoculated. (Knowledge of the source was not included in Form A and was therefore not determined in the city group.)

The Armenian village is always intermediate between the city group and the Arab village groups. The Armenian villagers use a doctor, isolation and inoculation to some extent, but also reply that they use charms, ointments, or passively do nothing while awaiting the will of Allah.

Former conscripts in the Turkish army know of inoculation but are content to leave it behind along with the rest of the Turkish regime.

Table 28

From Section II

' Remedies for
Sickness'

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 26) ABOUT

COLDS, etc.

Maximum score = 30

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

See a doctor	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Disinfect nose or throat	39, 71, 78, 80, 91 57, 72, 79, 81										
Perspiration	68										
Individual hand- kerchief	05, 17, 19, 21, 24, 07, 18, 20, 22, 28, 12, , , , , , , , , , 47, , , , , , , , , , 02, 47, 87, 07, 49, , , , , , , , , , 04, 06, 12, 31, 36, 05, 10, 30, 33, 38, 04, 06, 13, 30, 33, 05, 12, 14, 31, 36, 04, 06, 23, 31, 36, 05, 11, 30, 33, 38, 31, 40, 42, 48, 93, 95	37, 39, 51, 56, 63, 38, 49, 55, 62, 64, 66, 69, 76, 81, 67, 75, 78, 74, 77, 80, 94, 97, 76, 79, 95, 99	66, 69, 76, 81, 67, 75, 78, 74, 77, 80, 94, 97, 76, 79, 95, 99	74, 77, 80, 94, 97, 76, 79, 95, 99	84, 90, 93, 95, 99 85, 91, 94, 97, 00						
Know source											
Sneezing											
Coughing											
Kissing											
Sharing kerchiefs											
Sharing spoons etc.											
Bed mates											
Take aspirin or dr. medicine											
Hot drink											
Go to bed											
Isolate patient											

Comment :

About one fourth of the villagers are aware of the sources of infection of colds. Less than half of them use such remedies as taking a hot drink, inducing perspiration, going to bed, etc.

To induce perspiration, a pot of water is brought to a boil over a little fire on the floor and the patient squats beside it, covering himself and the steaming pot with a cloak or quilt. The Armenians have many herbs which they put in the pot to make the vapor pungent or aromatic.

Over half the villagers do nothing about a cold. Only one family reported isolating a person with a cold and only one reported treating the mucous membranes of the nose and throat with brine, or with a liquid, or a gaseous germicide or stimulant. Aspirin is carried by the village peddlers in their donkey-packs but its use for colds is unknown.

The precaution of using individual handkerchiefs, towels, or eating utensils is almost unknown. However the villager's custom of drinking from a "brîq" (a clay jug with a spout), by pouring water into the mouth in a continuous stream without touching the spout to the lips, is more hygienic than most drinking habits in the west.

The city group relies on perspiration baths, cupping, inhaling, rubbing the chest, soaking the feet in hot water, drinking hot infusions and other home remedies. Almost all of them use individual handkerchiefs, spoons and cups. The use of individual dishes and utensils at a table, as against squatting around a family dish on the floor and eating with one's fingers or strips of thin bread, is an outstanding differentiation of modern urban versus ancient rural culture in Syria.

More superstitious remedies crop up in as great variety as patent medicines do in the west.

Examples — For a cold : "Eat onions baked in the ashes, wrap your trousers around your head, and you will wake in the morning feeling very fit."

For cold, accompanied by headache : "Soak lemon peels in water, drink the water and eat the peels."

For rheumatism : "Apply a paste of frog's offal." etc.

COLDS (No. 26)

Table 30

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 27) ABOUT

From Section II

MEASLES

Maximum score = 20

"Remedies for Sickness"

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (each family indicated by two commas)

Isolate patient	0	10%	20%	30%	40%	50%	60%	70%	80%	90%
Rest in bed	02,05 (7, 09, 11)	13, 15, 18, 20, 25	29, 31, 33, 35, 37	39, 41, 43, 45, 48	50, 54, 56, 61, 66	70, 72, 75, 77, 80	82, 84, 86, 90, 92	94, 96, 98, 00, 24	27, 53, 63, 69, 73	
Drink soup	04, 06, 08, 10, 12	14, 17, 19, 22, 28	30, 32, 34, 36, 38	40, 42, 44, 46, 49	52, 55, 60, 65, 68	71, 74, 76, 79, 81	83, 85, 87, 91, 93	95, 97, 99, 2, 26	51, 62, 67, 73	
Soft diet	02, 13, 28, 33, 35	38, 42, 47, 56, 62	84, 90, 92, 99, 40	43, 50, 89, 95, 98	00					
Eat "leban"	05, 15, 31, 34, 37	39, 46, 48, 60, 64	85, 91, 96, 98, 41	45, 55, 94, 97, 99						
See a doctor	05, 13, 43, 09, 15	18, 21, 32, 51, 54	56, 62, 64, 66, 83	94, 99						
Hot bath or Steaming	02, 27, 71, 73, 75	78, 80, 96								
	07, 69, 72, 74, 76	79, 81								
	11, 61, 76, 24									
	36, 75, 19									

Comments :

In cases of measles, most of the persons of the city sample practise isolation, while not one villager thinks of it. On the contrary, villagers often send the other children to bed with the one having measles, as they consider that infection is inevitable and that it is preferable for all to have it at one time. The villagers use perspiration baths or external heat somewhat, but depend chiefly on prayer, or else do nothing. A soft diet of soup or "leban" (fermented milk) is fairly general. The Armenians often add, "give them candy and sugar, dress them in red clothes and never wash them."

In one Syrian village children with measles are taken, towards evening, to a sacred fountain and jars of water are thrown over them while fully dressed. The death rate from pneumonia and complications of measles was very high there in a recent epidemic.

The city folk use perspiration baths, soft diet and frequently consult a doctor.

Table 31

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 29) ABOUT

From Section II

CUTS AND OPEN WOUNDS

Maximum score = 10

"Remedies for Sickness"

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%
Apply antiseptic Sterile dressing	12, 57, 78, 13, 75, 96					
Ashes	02, 32, 36, 39, 46	80, 98, 95				
	29, 35, 38, 42, 47	96, 00				
Apply aseptic remedy						
Olive oil	01, 04, 08, 29, 36	39, 43, 56, 67, 70	77, 92, 95, 97, 26	89		
Salt	03, 06, 27, 33, 38	40, 46, 60, 68, 74	84, 93, 96, 00, 28			
	04, 36, 95, 03					
Soot	12, 91, 99, 67					
	10, 13					
Urine	12, 83					
	15, 66, 97					
Kerosene	38, 84, 98					
	24, 32, 36, 39, 42	50, 93				
Molasses	31, 35, 37, 41, 45	55				
Suck wound	06					
Wash with soap and water	08					
	05, 20, 32, 34, 39	40, 46, 54, 65, 88	95, 97, 13, 23, 36	44, 51, 58, 61, 71	87, 92, 99	
	18, 31, 33, 35, 40	43, 53, 55, 66, 92	96, 00, 77, 24, 41	43, 56, 59, 67, 77	86, 99	

CUTS (No. 29)

Only one in sixteen of these Alaouite villagers uses an antiseptic (usually iodine) on cuts or wounds, while in the city, about the same proportion is ignorant of antiseptics. Sterile dressings are not available or known; soap and water are used by almost half the rural sample, with preferences next in order for olive oil, ashes, kerosene, salt, urine, soot, and molasses. These household materials either coagulate the bleeding or at least wash the wound with an aseptic substance. Cobwebs, liquor and tobacco juice are also used. (Form A)

But they also use a large variety of charms and septic applications. Leather scrapings are popular for the astringent effect of the tannin - but little preference is shown as to whether the leather scraped is one's belt or the sole of one's shoe! A lotion several times encountered was a solution of hairless baby mice put up in olive oil and exposed to sunlight till disintegrated to a powdery sediment, then shaken well before using! For infected scalps, molasses is kneaded in till it grips each hair and the mass, including the hair, is then jerked off with any scabs. For broken bones, one recipe was to set the limb and then wrap it in sheep's wool together with black raisins.

The Armenian villagers and the city group depend overwhelmingly on iodine and bandages for open wounds. The Alaouite villagers showed a significant increase in their use after three months of instruction by the itinerant clinic of the Near East Foundation.

Table 32 DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 30) ABOUT NETS
From Section III The "normal" rural Arab sample (N=100) (families identified by number) Maximum score = 15
"Infant Hygiene" compared with the urban sample (N=50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%
Sleep under nets	42,74,82,85,90, 71,75,84,89,02,	42,47,82,85,90, 16,10,29,31,33,	42,47,82,85,90, 34,36,38,40,43,	46,49,57,73,82, 35,37,39,41,45,	46,49,57,73,82, 48,56,58,61,92,	49,55,97,99, 54,96,98,00

Only about half of the village babies sleeps under nets, even part of the time, in this region infested with malarial mosquitoes, flies by the million, and sandflies. Only 9% uses nets regularly.

The villagers, for the most part, swaddle their babies, binding their arms, legs and bodies rigidly in place, while the city mothers swaddle theirs not at all (Form A data). Generally the villagers use crude cradles, but often the baby sleeps in bed with its mother, or on the floor, or in a hammock. The hammock serves both for vermin protection and for rocking (sometimes with a string tied to the mother's foot while she sorts wheat or does the washing.)

UTENSILS (No. 32)

	Boiled	Unboiled
Urban	22.53	71.73
Rural	27.61	75.79

REGULAR HOURS (No. 33)

[illegible]

Only one rural family (1%) claims to feed the baby at regular hours. Only 19% of urban mothers does so. The baby is fed when it cries.

When the doctrine of regular feeding hours was expounded to one peasant mother, she commented: "Your American babies may survive such treatment, but here in Syria babies would die if not fed whenever they cried. Why did Allah make them able to cry, if not to tell the mother when to feed them." As nursing at the breast requires no preparations and is done in public, it is universally and promptly used to plug the mouth of a squawking child!

The one rural baby fed at regular hours has a story behind it. The mother died, leaving the father at a loss as to how to care for the suckling infant. The family goat rose to the occasion and suckled the child directly. When, three times a day, the goat is brought in from pasture, the baby claps and coos as though welcoming its mother. It was the only baby encountered in that village who kept anything approaching regular hours of feeding!

Table 33
From Section III
"Infant Hygiene"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 31) ABOUT

FOOD (babies under 1 year)

Maximum score = 100

The "normal" rural Arab sample (N = 100) (families identified by number)

compared with the urban sample ($N=50$) (each family indicated by two commas)

Human milk	03,06,08,10,15,	18,20,24,28,31,	35,37,43,46,49,	51,55,57,60,63,	65,67,69,77,87,	89,96,02,16,23,	27,32,38,40,53,	61,72,74,76,79,	81,83,91,93,97,
daily	04,07,09,12,17,	19,21,25,30,34,	36,41,44,48,50,	54,56,58,62,64,	66,68,71,86,88,	90,01,14,22,26,	99,33,39,42,59,71,	73,75,78,80,	82,90,92,95,98,
Animal milk or "leban," daily	13,64,07,16,23,	27,32,39,53,61,	72,74,79,87,	85,92,95,97,99,					
Tinned milk	14,91,02,22,26,	29,33,42,59,71,	73,75,78,80,82,	90,93,96,98,					
Boiled									
Water daily	02,07,42,72,74,	78,91,93,97,13,	27,32,39,75,95,						
Boiled	03,22,59,73,76,	81,92,96,98,23,	29,33,71,79,						
	12,16,22,28,42,	53,59,80,83,86,	88,91,02,20,66,	72,74,78,89,					
	13,19,25,38,32,	58,76,82,84,87,	90,96,17,24,71,	73,75,79,99,					
	19								
Tomatoes, oranges,	16,13,22,74,								
grapes, greens	52,26,73,85,								
Butter, eggs, cod.	76,73,75,50,								
liver oil	81,74,78,								
Cereal or	13,20,32,	76,81,	84,91,73,75,82,						
acid-bread	16,36,53,		88,59,74,79,90,						
Adult diet	02,07,07,								
	02,97,74,								

Comment :

The strongest point of infant hygiene in this sample is the fact that practically every rural baby is breast fed by its mother. The mother has an ample supply, sufficient for two babies' to nurse simultaneously. There exists no preserved milk. Supplementing the mother's milk with that of cows, goats, or sheep, is done only as the baby gets beyond its first year. Animal milk is not always boiled in the villages, but is invariably boiled in the city. Less than half the babies is ever offered water. Only one case (1%) reported boiling water first.

The value of vitamins is unknown. The seven percent of villagers, and even fewer townspeople, who give their babies tomatoes, greens, butter, etc., do so because they happen to be eating these things themselves and not because they appreciate vitamin values.

The age at which the mother's milk is supplemented varies from five to fifteen months. In two cases, full adult diet began when the babies were only five months old. When adult diet is begun, frequently the mother chews it up first and then transfers it to the baby's mouth.

Table 34

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 34) ABOUT

From Section III

DIAPERS

Maximum score = 15

"Infant Hygiene"

The "normal" rural Arab sample (N = 100) (families identified by number)

compared with the urban sample (N = 50) (each family indicated by two commas)

Sand or earth	02,04,06,08,18, 20,22,24,27,32 38,41,43,51,55 57,59,62,64,66 69,72,74,76,78 80,92,94,96,98 01,10,12,14,16 28,53,70,84,86 88,90,00
Pipe fitted to urethra	03,05,07,17,19, 21,23,25,29,34 40,42,47,54,56 58,61,63,65,67 71,73,75,77,79 81,93,95,97,99 09,11,13,15,26 29,60,82,85,87 89,91
Pot under hole in mattress	05,30,33,36,39 48,57,72,76,78 80,83,02,09,11 12,16,24,26,28 49,53,59,61,70 75,84,86,88,90
Cloth diaper	14,31,34,37,46 50,71,73,77,79 81,01,03,10,12 13,23,25,27,45 52,55,60,69,74 82,85,87,89,91
Rubber	

Comment :

The diapers in the villages, where cheap cloth for a modest layette would consume an entire week's income, are usually of the sand or earth type. Fine sand or dust is spread an inch thick on a cloth, which holds it against the baby's bottom. This is absorbent and reduces the amount of cloth and laundering needed. If the region provides soil of fine enough particles, it may often be as harmless as talcum powder, but often the soil is coarse and the baby's skin becomes red and raw. The cloth diaper reported seldom means cloth alone, except in the city sample where no earthen type diapers are used.

The other three types were encountered in other villages. The pipe consists of a glass or wooden tube, shaped like the mouth of a urenal, to fit the urethra of either sex. It is bandaged snugly in place, the baby is tied rigidly with swaddling clothes and a tube carries the urine to a pot under the cradle — thus eliminating diapers. In the pot type the baby is strapped in place on a mattress with a hole and pot under the child's buttocks. The "rubber" type is a by-product of western civilization. Old inner tubes of automobiles tires are cut up and used as "panties" next to the child's skin, because they are more waterproof than cloth !

Table 35

From Section III
"Infant Hygiene"DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 35) ABOUT
CHANGING DIAPERS,

Maximum score = 15

The "normal" rural Arab sample (N = 100) (families identified by number)

compared with the urban sample (N = 50) (each family indicated by two commas)

In last 24 hours	0	10%	20%	30%	40%
1	01,25,68	35,44,51,59,62	64,66,69,72,74	76,79,81,92,98	
2	02,43,91	08,20,25,30,33	58,48,55,61,63	65,67,70,75,75	78,80,83,97
3	06,10,13,21,26	28,33,37,41,45	52,56,60,62,86	89,91,94,99	
4	09,12,14,22,27	32,34,40,42,50	54,58,77,84,88	90,93,95,00	
5	03,15,85				
6	11,17,87				
7	16,96				
	39,				
	48,				

hours a day.

Peasant mothers who must bake and nurse, tend cattle, fetch water, make dung cake fuel and do all their other tasks, cannot be expected to spend so much time and effort on mere cleanliness. The solution ramifies into their economic standards and whole culture and is not a simple matter of urging them to wash their "diddies" oftener.

Hot water

Soap

Sunlight

WASHING DIAPERS (No. 36)

Maximum score = 15

0	10%	20%	30%	40%	50%	60%	70%	80%
01,05,08,12,15 17,19,21,23,25,27,29,31 33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95,97,99	25,30,44,80,82, 93,27,30,32,34 38,42,45,48,57 60,71,74,76,78 83,86,90,92,95 97,99	40,43,46,50,53 60,72,75,77,79,85,89,91,94,96 98,00	00,23,27,31,33 36,40,43,46,57 61,72,75,77,79 95,97,99	38,42,45,50,53 58,60,69,71,73,75,77,79,81,83 85,87,90,92,94 96,98,00	43,45,48,52,57 59,61,70,72,74,76,78,80,82,84 86,89,91,93,95 97,99			

merely beat the wet cloths on a flat stone with a stick. A cake of soap is bought for three eggs from the village peddler. As the chickens merely scavenge and are not specially fed, eggs are few and far between. Moreover they must provide the woman with all her purchasing power for clothes for the children, trinkets, charms, etc. The free sunlight, with which Syria is abundantly supplied, is used merely for quick drying with no appreciation of its purifying effect.

The average frequency of washing the accumulated diapers in the villages was once every 2.8 days, while in the city it was daily (Form A).

Comment : About two thirds of the women use hot water and a good sunning to cleanse the diapers. The rest use cold water with ashes in it, or

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 37) ABOUT

BATHS

The "normal" rural Arab sample (N = 100) (families identified by number)

The "normal" rural Arab sample ($N=100$) (families identified by number) compared with the urban sample ($N=50$) (each family indicated by two commas)

Comment :

In these villages bathing a baby is no easy matter where water, fuel, soap, tubs or adequate water vessels and towels require so much time, effort and non-existent cash.

Four mothers asserted that they had never bathed their babies and sincerely believed that to do so would injure their health.

The adults report that they never take cold water baths and average twice a month for hot water baths. Babies average twice a week. The house of one room, with mud floor, with no drainage, and no chimney does not facilitate bathing. Outdoors a cauldron is heated with dung for fuel. In good weather the children's protest to a bath is only mild; in being weather the issue is not raised.



The Alaouite mother tries to protect her baby's health by many blue beads, tinsel coins, and other ornaments on its dress or cap. Actually its best health insurance lies in the ability of the mother to nurse it amply and in the abundant sunlight it gets after leaving the cradle.

The mothers are totally ignorant of contagion. They will wipe their own eyes, heavy lidded with trachoma, with a sleeve or head cloth and then wipe the baby's eyes with it. The few that use a cloth or netting over the cradle do so because they want the baby to sleep, as it might not if annoyed by insects, not because they realize that malaria, diarrhea, etc., may be transmitted by those insects.

Table 37 From Section III "Infant Hygiene" DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 38) ABOUT DE-GASSING The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas) Maximum score = 15

"De-gassing"	0	10	20	30
04,06,23,24,77,78,				

Comment: Relieving a baby after nursing by patting it and getting up the air swallowed, is almost an unknown practice here in either town or country. Mothers all try nursing some more when the fully fed baby frets on being put down; then they resort to rocking, cuddling, etc., but almost never to a conscious technic of getting the baby to belch up the gas that is on his stomach. It is one of the simplest items of baby hygiene to teach, as it is uncomplicated by economic or other factors, and as its efficacy is obvious.

SUN BATHS (No. 39)

Number of sun baths per week	0	10	20	30	40
1 88					
2 19					
3 17					
4 26					
5 13					
6 18					
7 01,02,06,30,49					

Comment: Intentional sun baths for babies to supply vitamin values are unknown in the villages. The few mothers who reported exposing their babies to sunlight while naked, did so incidentally. They merely did not dress it immediately after a bath while gossiping with a neighbor. The city mothers gave sun baths more fully and purposefully.

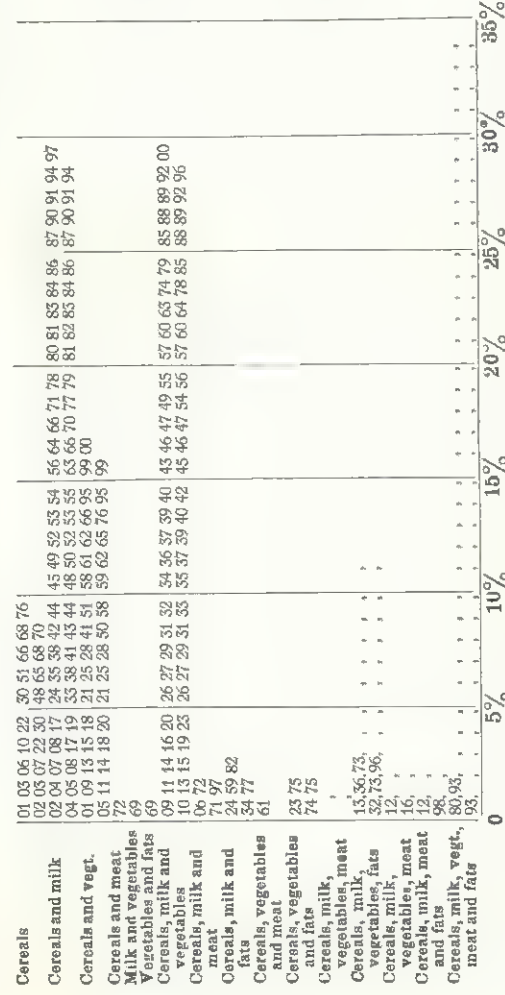
The abundance of sunlight in Syria and the scanty clothing, or even entire absence of clothing, worn by the very young children is one of the most hygienic factors in child life in this region.

Table 38
From Section IV
"Food and
Cleanliness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 40) ABOUT MENU (for 2 days)

Maximum score = 40

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

In this analysis of diet patterns all possible combinations from one to five at a time, of the five main types of food were studied. Combinations not found are omitted from the graph.

Wheat is their mainstay. Milk comes next. Meat is far too expensive except for rare occasions. Vegetables supplementing these show a high frequency, as the survey was in April, when wild greens are abundant after the rains. In the winter practically all vegetables, except onions, disappear from the family diet. For weeks at a time in winter the diet may be bread and onions with "leban" once a day. This complete absence of vitamin bearing vegetables and fruits, fresh or preserved, in winter is the outstanding dietary lack of these interior villages. They know of many vegetables and they often know how to dry tomatoes, eggplants, apricot, figs, grapes, etc, for the winter, but they see no need of them and do not make the effort. A common reaction is, "We are farmers (fellahen). We grow wheat. Why should we raise vegetables?" Also lack of water often confines them to dry farming exclusively.

In contrast to the meager and monotonous rural diet, the city people of this sample, practically never have less than four of the five types of food every day. The contrast in terms of variety of individual dishes at a meal is even greater (Form A data). The villagers average a little over two different dishes per meal, while the city-dweller averages around six different dishes or almost three times as many. The number of different dishes is an excellent measure of the degree of complexity of the culture of the people.

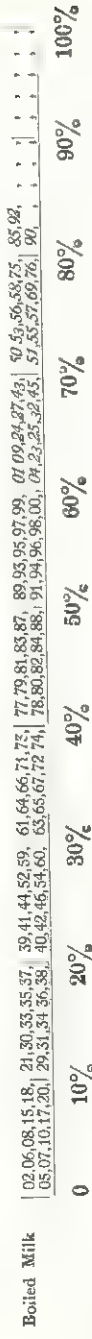
Table 39

From Section IV
"Food and Cleanliness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 41) ABOUT BOILED MILK

Maximum score = 20

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

Boiling the milk is a custom that is almost universal in Syria. Only when in a hurry or lazy do the people drink it raw.

In a warm climate without refrigeration facilities, the milk soon sours. But boiled and fermented to "leban" it is kept edible for several days. Any excess is converted into clarified butter or cheese. This is a major source of income to the semi-nomadic peasants and to the pure Bedouins.

The universal boiling of milk and the dependence on goat's milk are important factors, along with abundant sunlight and outdoor life, in keeping down the incidence of tuberculosis in these sampled populations. Along with the dirt, trachoma, flies and general unhygienic features of these villages, there are some excellent hygienic features (such as the use of "leban") which are often overlooked by outsiders!

Table 40 a
From Section IV
"Food and
Cleanliness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 42) ABOUT
VEGETABLES IN WINTER

Maximum score = 25

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Bananas	02 27 30 33 38	42 46 57 78 94	99								
Beans	03 29 32 36 41	45 50 73 79 96	00								
String beans											
Cabbage	02 23 27 35 37	45 47 57 96									
Carrots	04 24 33 36 44	46 48 73 97									
Eggplant	01 05 42 45 48	79 96 99									
Garlic	02 30 44 47 56	93 97									
Grapeleaves	01 03 05 23 29	34 46 49 60 64	73 78 80 85 93								
Greens	02 04 07 28 33	44 47 57 62 70	74 79 84 91 96								
Lentils	01 03 05 07 09	12 14 16 18 21	23 27 30 32 37								
Orangers	02 04 06 08 10	13 15 17 19 22	26 29 31 35 39								
Okra	01 07 19 30 66	73									
Onions	02 17 24 56 68	27 30 32 34 36	39 41 43 45 47								
Peas	01 03 05 07 23	29 31 33 35 38	40 42 44 46 48								
Peppers	02 04 06 20 24	11 13 15 17 19	23 26 28 30 33								
Potatoes	01 04 06 08 10	12 14 16 18 22	24 27 29 32 34								
Squash	01 04 27 30 32	34 40 44 46 49	58 78 80 96 98								
Artichokes	02 05 29 31 33	39 42 45 47 57	74 79 93 97 99								
Asparagus	01 78 80 96 00										
Beets	01 03 05 07 09	12 14 16 18 21	23 26 29 31 33								
Cactus	02 04 06 08 10	13 15 17 20 22	24 27 30 32 34								
	13 24 35 70 78	89									
	16 37 57 71 79										
	02 04 06 09 12	14 17 19 21 24	25 30 32 34 36								
	30 32 44 74 79	93 96 98 00									
	02 06 24 44										
	05 23 30 47										
	29 32 38 43 95	97 00									
	31 36 42 92 96	99									
	01 06 29 31 33	36 44 47 78 96	00								
	05 28 30 32 35	40 45 49 93 99									

Table 40 b
From Section IV
"Food and
Cleanliness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 42) ABOUT
VEGETABLES IN WINTER

Maximum score = 25

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

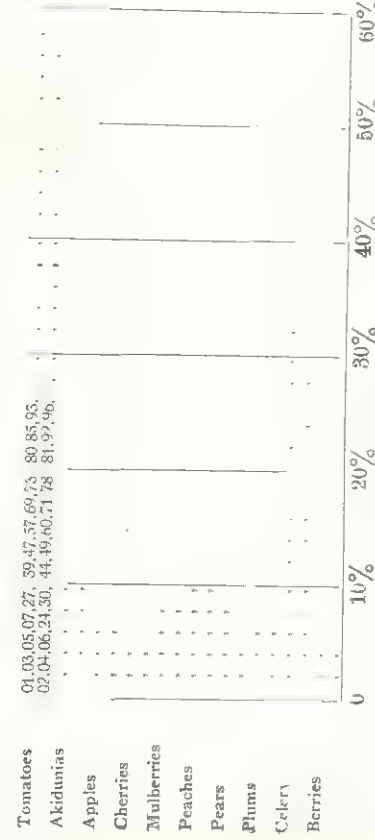
	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Cauliflower	02										
Carob	02 44 2										
Leeks	53										
Lemons	04 33 40 46										
Limes	00 39 97 99										
Parsnips	51										
Pomegranates	02 04 06 23 30	42 47 57 75 78	80 96								
Sweet potatoes	03 48 07 24 38	44 49 71 74 79	94 97								
Pumpkins	05 30 47 74 78	80 93									
Quinces	06 14 49 75 79	84 89									
Turnips	02										
Muskmelon											
Watermelon	03 06 49										
Apricots	03 06 50 47										
Dates	05 07 14 44										
Figs	04 08 30 32 34	36 39 41 44 46	50 60 94 96 98	00							
Olives	06 29 31 33 35	38 40 42 45 48	63 65 95 97 99								
Grapes	01 03 46 17 19	22 29 52 53 57	59 61 71 73 75	78 81 84 86 89	92 94 96 98 00						
Cucumbers	02 04 06 18 21	28 30 34 36 38	40 44 46 54 56	60 64 72 74 77	75 82 85 87 90	93 95 97 99					
Lettuce	1 63										
Radishes	01 03 05 07 19	29 34 35 35 38	41 44 46 54 57	64 65 79 80 96	00						
	02 04 06 08 21	30 32 34 36 39	42 43 49 55 61	71 74 80 84 99							
	01 03 16 29 32	49									
	02 05 26 30 44	80									
	07 24 32 44 93										
	06 30 42 47 90										
	02 06 24 30 32	35 38 41 44 46	50 61 96 00								
	05 23 30 31 34	36 39 42 45 47	57 95 99								

Table 40c

From Section IV

"Food and
Cleanliness"DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 42) ABOUT
VEGETABLES IN WINTER

Maximum score = 25

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

Comment :

In winter the rural diet becomes very meager in vitamin-bearing fruits and vegetables. Not a single type of fruit or vegetable is eaten by every family. Only five types — garlic, onions, lentils, peppers and figs — are eaten by as many as half the families at any time during the winter. The report here records a family as eating a vegetable or fruit if they ate it even once last winter. The actual daily consumption was far less than in the graph. The graph represents the maximum consumption.

This lack of greenstuffs in winter is the greatest dietary problem of these villages. A study of the items reveals many which are grown there and can be easily dried in the sun (such as apricots, figs, grapes, tomatoes, eggplant), several others that are easily preserved in jars of brine (such as grape leaves, olives), as well as types requiring no treatment to preserve (such as carrots, potatoes, beans, beets). Even without water for irrigation, education could do much to enrich the rural diet and contribute to reducing the mortality of the children.

As usual, the urban sample is far superior in possessing a greater range of fruits and vegetables in winter, as well as in showing a larger percentage of families eating the chief types. Almost all the urban families have beans, olives, dates, figs, and grapes as well as the ubiquitous garlic, onions and lentils.

In the villages the average number of vegetables eaten at all in the winter by a family is two, while in the city it is twelve (Form A data). Differences in income, transportation facilities, attitude, play a part, as well as do differences in cultivated economic wants of the people.

Table 41

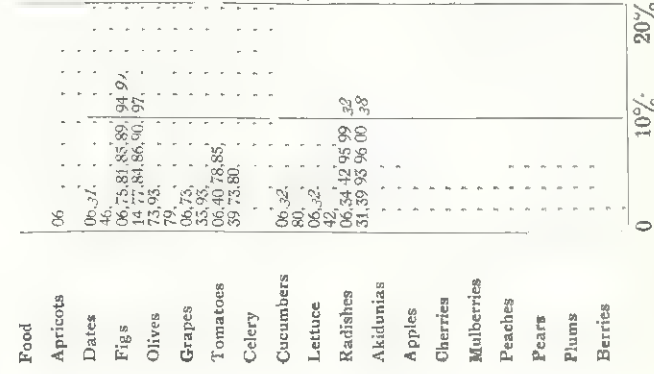
From Section IV

"Food and
Cleanliness"DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 43) ABOUT
CLEANING OF FOODSTUFFS

Maximum score = 15

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (each family indicated by two commas)

Frequency of cleaning the foodstuff before eating it



Comment :

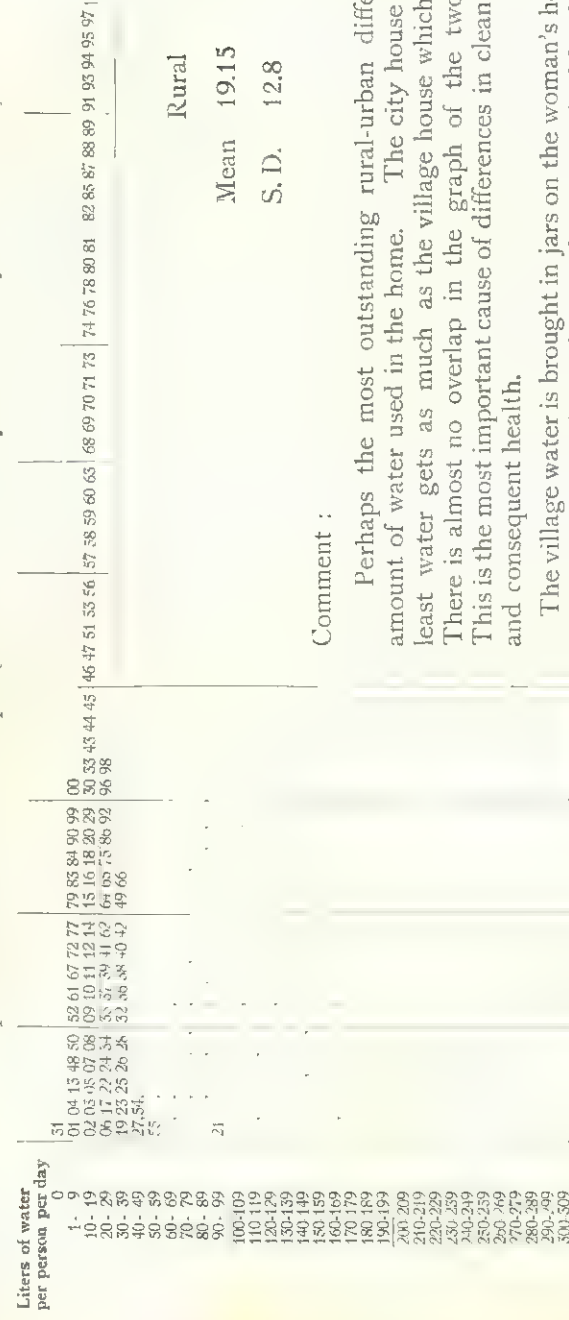
Hardly any villagers wash (or peel) fruit, etc, before eating it, whether or not it comes from a market or source where others outside the family have handled it. The risk of typhoid from lettuce washed in ditch (and sewage) water is unknown to them but typhoid itself is well known!

In the city cleanliness is uneven. Some of the most dangerous carriers, such as lettuce, go unwashed. But the ancient items of dates, figs, olives, and grapes, that have been in the land since the Mosaic and Islamic law-givers enjoined cleanliness, are habitually washed or peeled. It suggests custom, more than intelligent adaptation to germs, as the explanation.

Table 42
From Section IV
"Food and
Cleanliness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 44) ABOUT
AMOUNT OF WATER
The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

Maximum score = 30



Comment :

Perhaps the most outstanding rural-urban difference is in the amount of water used in the home. The city house which uses the least water gets as much as the village house which uses the most. There is almost no overlap in the graph of the two distributions. This is the most important cause of differences in cleanliness, hygiene, and consequent health.

The village water is brought in jars on the woman's head from a well or spring. Frequently two hours a day are required for the woman to go, draw the water, and return. Naturally water is used sparingly, the average amount being about 18 liters a day per person (about one kerosene tin). Families using as little as 3 liters a day per person were found!

In the city there is running piped water in almost every house. Water meters are not provided for less than 250 liters a day per house. The result is that rural consumption per person is only about one sixth the urban consumption.

On the dry plains and hills of Syria the water supply is basic to both health and wealth.

No. 44. Amount of Water



Hygiene depends to a large extent on water. In almost all the villages of Syria the water is carried by the women and girls, in jars or oil tins, from the communal well, spring or pool. The distance to houses varies from fifty meters to three kilometers. The result is sparing use of water for cleaning one's self, one's clothes, or one's house.



The usual village well is surrounded by stone curbing and a muddy area. Overflow from the troughs, urine, manure and earth are churned into mire by the cattle which come here to drink. The moisture drains off slowly, filtering through the ground, back into the well.



The well of the experimental village was curbed with concrete, the overflow being carried off in a channel to water a nursery of trees. The village supplied the labor, the sand and stone, while the Clinic provided the cement and iron.

Table 43
From Section IV
"Food and
Cleanliness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 45) ABOUT

SOURCE OF WATER

Maximum score = 50

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
SUMMER											
Spring	71,74,76,81,83, 73,75,77,82,84, 72	85,87,89,91, 86,88,90,	11,13,15,17,19, 12,14,16,18,20	23,26,28,36,38, 24,27,30,37,41	43,45,47,50,53, 44,46,49,52,57	58,60,62,64,66, 59,61,63,65,67	68,70,80, 69,39				
Cistern											
Well	01,03,05,07,09, 02,04,06,08,10	11,13,15,17,19, 12,14,16,18,20	23,26,28,36,38, 24,27,30,37,41	43,45,47,50,53, 44,46,49,52,57	58,60,62,64,66, 59,61,63,65,67	68,70,80, 69,39					
Stream											
Pool											
WINTER											
Spring	71,74,76,81,83, 73,75,77,82,84, 72	85,87,89,91, 86,88,90,	11,13,15,17,19, 12,14,16,18,20	23,26,28,36,38, 24,27,30,37,41	43,45,47,50,53, 44,46,49,52,57	58,60,62,64,66, 59,61,63,65,67	68,70,80, 69,39				
Cistern											
Well	01,03,05,07,09, 02,04,06,08,10	11,13,15,17,19, 12,14,16,18,20	23,26,28,36,38, 24,27,30,37,41	43,45,47,50,53, 44,46,49,52,57	58,60,62,64,66, 59,61,63,65,67	68,70,80, 69,39					
Stream											
Pool											

Comment :

In these particular villages the water at all seasons was from a community well or spring and reasonably free from contamination, no latrines existing anywhere in the whole plain (See Table 54). In neighboring villages, however, mosquito and slime-infested open cisterns or stagnant pools are used, by cattle and people alike, for drinking, bathing and washing! In none of these villages was there a single family found which had any conception of purifying drinking water, by boiling or filtering (No. 47)

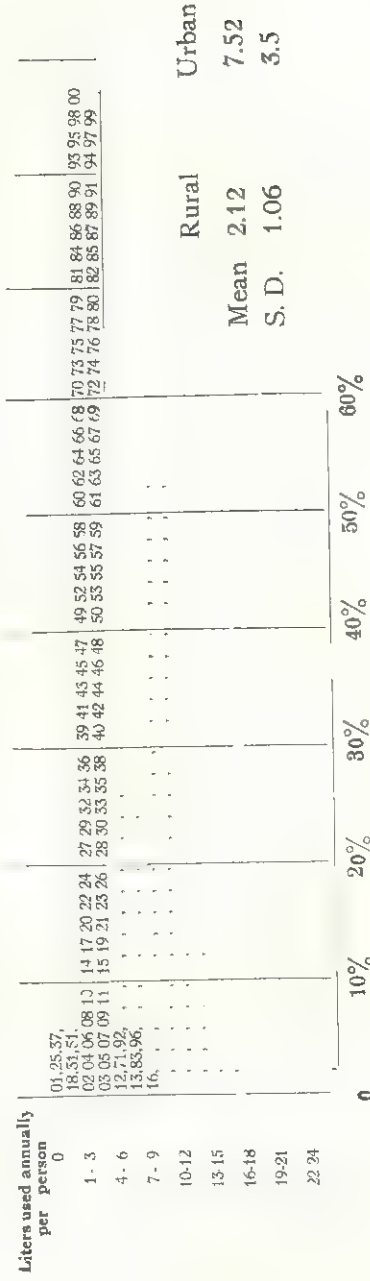
The city sample had water piped directly from a large spring in the mountains (the Dog River source).

Table 44
From Section IV
"Food and
Cleanliness"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 48) ABOUT SOAP

Maximum score = 20

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

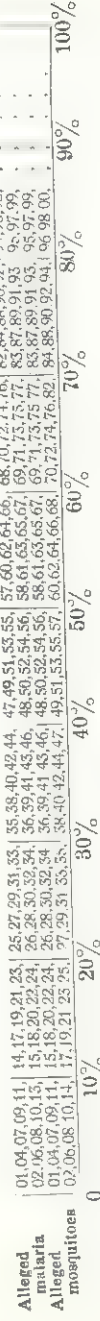
The use of soap is, perhaps, one of the best indicators of hygienic status, but it is dependent in part on economic status. Although both city and village samples show fairly normal distribution curves, yet the overlap is very small. The city sample uses more than three times the amount of soap per capita that the villagers use. Soap in these villages is bought from the peddler for two or three eggs. Eggs are the "woman's income" and with them she must also buy minor clothing; household utensils, and all trinkets for herself and the children. The half-starved chickens do not provide enough eggs to overstock the family with soap !

Table 45
From Section V
"Insects"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 49) ABOUT MOSQUITOES

Maximum score = 20

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)



MOSQUITO AVOIDANCE (No. 50)

Maximum score = 20

	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Sleep elsewhere	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cover up	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Smoke	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Spray	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Comment : Of all these graphs, this one reporting the presence of malaria and mosquitoes gives the most similar result between town and country—an overwhelming affirmative that malaria is present (96% of villagers and 96% of townsmen).

To escape mosquitoes, half the villagers entirely cover themselves up with their bedclothes. Half of them report seeking, usually unsuccessfully, some other sleeping place which would be mosquito-free, in the fields or on the roofs. Several persons reported letting the mosquitoes feed until satiated so that the mosquitoes would leave them alone.

The source of mosquitoes (questions No. 52 and No. 53) is completely unknown to 90% of these rural families as is also usually unnecessary. The villagers reported letting the mosquitoes feed until satiated so that the mosquitoes would leave them alone. The villagers state that the mosquitoes come "from the ground," "from the air," "from the north," or "from Allah." No one in the village had taken any step, nor knew of such steps as stocking ponds with fish, draining, covering, or oiling them. Only one city family had used fish as a preventive — the other forty-nine gave as the reason that they carry malaria is similarly

The statement that mosquitoes breed on water surfaces is received with skepticism. That they carries malaria is similarly negative returns (No. 54) as the villagers.

The statement that mosquitoes breed by pictures, or an imaginative account, such as — “the tiny malaria jinns doubted by the fellah until the fact is made vivid by their evil errands from sick person to well person.” (meaning the parasites) use mosquitoes as horses to fly on their evil errands from sick person to well person.”

Table 46

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 51) ABOUT

From Section V

"Insects"

MOSQUITO NETS

Maximum score = 20

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

Only one fifth of the village families is fully covered by mosquito nets in the malarial season. These villagers use nets, more because the nets are usually of cheesecloth in varying degrees of intactness. Another fifth is partially covered, while the remaining three fifths sleeps exposed. Most of the people would use nets if they could afford them—although one woman swore she would never use one under any circumstances. 68% of the city families are fully covered and all are partially protected. They average one sleeper per net against two under each net in the villages.

Screening of windows exists in a few of the city houses. The villagers are too poor to have glass, or wood work, or any windows at all in their mud hovels.

Cheesecloth is obtainable from the travelling peddlers but it costs more eggs than the housewife has. The meager laying of her hens is her sole pocket money and must suffice for all her purchases—cloth, soap, dishes, trinkets, etc.

No. 57. Food Covered from Flies



An interior of an Alauite peasant's house. The family's entire supply of kitchen and dining room utensils is in the picture! The inverted wicker basket when lowered keeps the chickens and goats (and incidentally the baby and the flies) out of the food. The little basket contains a small pot of boiled milk and flat loaves of bread; the larger pot beside the basket will be used in cooking the dish of the day. A tin mug, an enamel bowl, a clay basin, and one big spoon complete the culinary equipment. There are no tables or chairs in any of these houses - the family squats on the mat and dips with pieces of bread or their fingers into the common dish. A bundle of straw at the left is ready for weaving into fancy colored baskets. Behind the boy in the dark recess are the animal quarters. In the left background are the mouse-proof grain bins, made of wicker daubed with clay. They are filled from the top and sealed after the harvest. The daily supply is taken from a round hole at the bottom, to be ground in a hand mill by the women.

Table 47 DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 55) ABOUT

From Section V

Maximum score = 30

"Insects"
The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

FLIES

Alleged present: 01,03,05,07,09, 11,13,15,17,19, 21,23,25,27,29,31, 33,35,37,39,41, 43,45,47,49,51, 53,55,57,59,61, 63,65,67,69,71,73, 75, 77,79,81,83,85,87,89,91, 93,95,97,99,00.

Swatters used

Flypaper

Traps

Poison

0

10%

20%

30%

40%

50%

60%

70%

80%

90%

100%

Comment:

The flies which swarm everywhere are admitted by 95% in each sample. There are a few people who deny their presence!

No remedies to dispose of them are known in these villages. On the other hand, about half the city group uses flypaper. Flytraps are unheard of.

An attempt was made to measure the number of flies in each household by means of flytraps built of materials available in the villages and standardized in respect to type, size, bait, location, and duration of exposure. The preliminary experiments (See Dep't. of Sociology yearbook, Vol. III typed manuscript in the University Library) revealed so many variables in temperature, humidity, wind, amount of shade, presence of hornets, proximity of rival feeding places, height from floor, and other environmental factors, as to render such measurement too elaborate for the purposes of this survey.

FOOD COVERED FROM FLIES (No. 57)

Maximum score = 5

Covered

0 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Comment:

Only one fifth of the villagers keeps its food in fly-proof places, while one hundred percent of the city families cover theirs. The wire screen cages of the city are too expensive for these poverty-stricken villages. Their method is to group the pot of milk, cooked food and bread on the floor and overturn a large wicker basket upon it to keep off chickens, children, and, incidentally, flies.

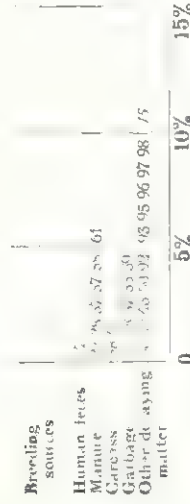
Table 48
From Section V
"Insects"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 58) ABOUT KNOWLEDGE OF FLY-BREEDING

Maximum score = 15

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

Frequency of families knowing where flies breed



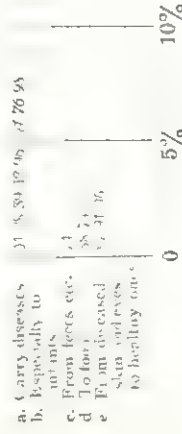
Comment :

Only about one villager in twenty could tell where flies breed ! Only three out of the hundred families knew that human feces or animal carcasses were fertile breeding spots.

One sheikh explored the surveyor to tell them of a medicine against the flies. On being asked where they came from, he replied, "From God". Yet as far back as the time of Moses, excellent preventives for fly-breeding among a people without latrines had been worked out in this country (See Deuteronomy 23:12, 13).

KNOWLEDGE OF HARM (No. 59)

Maximum score = 15



Comment :

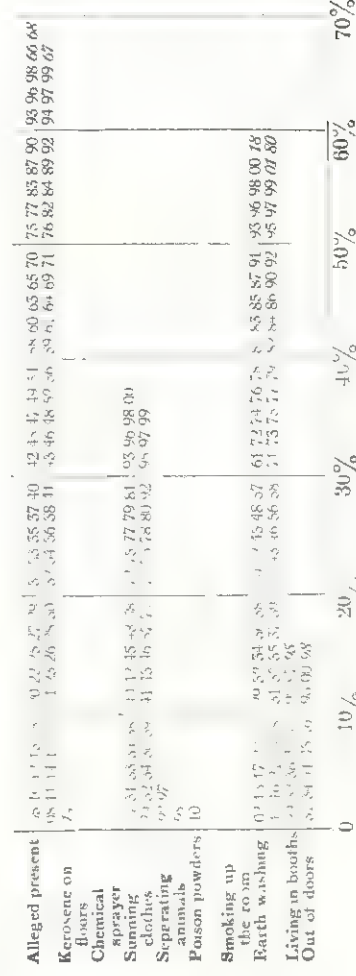
Less than one tenth of the villagers had any idea that flies were harmful and more than a nuisance. Consequently little interest is taken in eliminating them, or even in shooting off the black masses of flies around the baby's eyes. A movie film showing magnified flies going from filth to the villagers' food, provoked them to hearty cursing of the fly.

Table 49
From Section V
"Insects"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 60) ABOUT FLEAS

Maximum score = 15

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

Fleas are as thick as flies in these villages and are admitted to be in their homes by 69% of the people. One woman cried out, "Do we have fleas in summer? A ! yi ! yi ! Here are so many we leave the house to them and are driven out to sleep in the fields. We can't set foot in the house again till they are through."

Three two chief remedies are to shake out clothes in sunshine or over a fire and to paint the mud floor and walls with a paste of red earth and water which buries the flea nits and reduces the breeding. The more fundamental remedy of segregating the animals is more difficult, for it introduces problems of security from thieves when the livestock is in a separate stable, warmth for the family in winter in a fuelless land, etc.

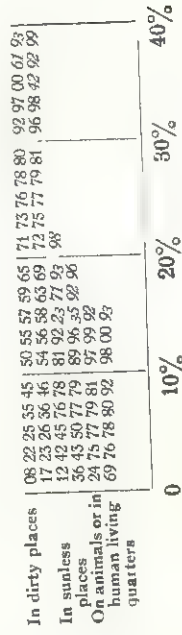
A species of sticky weed exists and is used like flypaper in some villages to collect the fleas.

Table 50
From Section V
"Insects"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 60) ABOUT
KNOWLEDGE OF BREEDING OF FLEAS

Maximum score = 5

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

The conditions under which fleas breed are unknown to the majority and only vaguely appreciated by the remaining 40% of the villagers.
To be cleaner than they are at present is extremely difficult, as water is so scarce and costly in labor and as mud is the only building material. To open windows and let in sunlight requires wood to make it possible to shut out the winter wind and cold. Even wooden shutters are beyond their incomes in this treeless plain. The Bedouin tent is more hygienic in this respect. To segregate the animals requires (a) afforestation to provide fuel as a substitute method of keeping the family warm, (b) expenditure on a stable in which neither tenant nor landlord is interested, and (c) greater security from thieves and village enemies (who poison cattle in the course of a feud) than exists in many villages at present.
An apparently simple problem, like eliminating fleas, ramifies into more basic educational, economic, agricultural, legal, and political problems, that require prior and inter-dependent solutions. No fleas were found in the city sample.



No. 60. Fleas

The housewife is spattering water mixed with a whitish clay over the mud walls of the house both outside and inside. This is intended chiefly to bury the oncoming generation of fleas.



No. 62. Lice

A close haircut is one of the principal antidotes for lice. Kerosene is known only to a few. No other chemical "delousers" are known to these villagers.

Table 51 DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 62) ABOUT

From Section V

"Insects"

LICE

The "normal" rural Arab sample (N=100) (families identified by number) compared with the urban sample (each family indicated by two commas)

Maximum score = 20

	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Hair-cutting	10 31 42 54 72	86 97 14 25 73	51 96								
Hair-combing	15 39 53 67 82	90 12 27 52 67	92 99								
Kerosene	01 08 10 13 16	14 21 23 25 27	29 51 55 58 59	37 39 41 43 45	50	54 56 58 60 62	64 66 69 71 75	77 79 82 84 86	88 90 92 94 96	98 00 52 73	
	06 09 12 15 17	19 22 24 26 28	30 32 34 36 38	40 42 44 48 53	55 57 59 61 63	65 67 70 74 76	76 80 83 85 87	89 91 93 95 97	99 14 72 61		
Hot baths and laundering	01 04 06 08 12	15 17 19 21 23	26 28 30 32 34	36 38 40 42 44	46 49 51 53 55	58 61 63 65 68	71 74 76 78 80	82 84 86 88 90	92 94 96 98 00	10 14 43 39 72	
	02 05 07 09 13	16 18 20 22 25	27 29 31 33 35	37 39 41 43 45	48 50 52 54 56	60 62 64 66 70	73 75 77 79 81	83 85 87 89 91	93 95 97 99 03	11 24 37 69 89	
Chemical delousing	22 33 44 44 61	73 85 96 00	79 94 96								

Comment :

The presence of lice is less freely admitted than that of fleas or flies. Every villager knows that hot baths are one remedy for them and almost all speak of hair-combing. Cutting the hair of children completely is reported by about one fifth of the sample. Such an effective remedy as kerosene on the hair is almost unknown.

The best informed villagers were those few who ever returned from conscription in the Turkish army. They had had experience in army prisons !

No lice at all were reported from the city survey.

Table 52

From Section V

"Insects"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 63) ABOUT

BEDBUGS

Maximum score = 20

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

Fumigation	0	10%	20%	30%	40%	Comment :
Sunning clothes	29 32 40 50 76	86 93 95 97 99				Against bedbugs a minority suns its clothes or pours boiling water into all cracks. The rest do nothing. The more expensive and effective chemical remedies of kerosene, fumigation, sprays, etc. are unknown.
Chemical sprays	31 39 42 74 77	92 94 96 98 00				
Smoke from hearth	09 47					
Boiling water into cracks	12 19 31 39 42	71 73 75 77 79	82 84 88 92 94	96 98 00 99		
Kerosene into cracks	16 20 32 40 66	72 74 76 78 81	85 87 91 93 95	97 99 99		
						One woman complained, "I cannot kill them. They are too many."

Table 53

From Section VI

"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 64) ABOUT

GARBAGE DISPOSAL

Maximum score = 25

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%	60%	70%	80%	90%
In street or yard	09 13 23 29 33	35 38 41 43 46	49 57 59 71 73	75 77 79 95						
In garden or field	12 19 27 32 34	36 40 42 45 48	50 58 69 72 74	76 78 80 97						
Container open	01 03 05 07 15	23 25 27 30 37	44 52 57 59 61	63 65 67 69 71	73 75 78 80 83	86 89 91 93 96	99			
Container closed	02 04 06 14 16	24 26 28 31 39	47 53 58 60 62	64 66 68 70 72	74 76 79 81 84	87 90 92 94 98	00			
In stream or water	23 27 58 61 71	73 75 77 79								
In stable or fed to animals	24 57 59 69 72	74 76 78 81								
Buried										
Burned										

Comment :

One hundred percent of the villagers throw their garbage into the street, yard, field or garden, open to flies, chickens, and dogs. No one attempts to cover, bury or burn it!

Eighty four percent of these townspeople put their garbage into closed containers to be emptied when called for by the municipal truck. The rest use open containers.

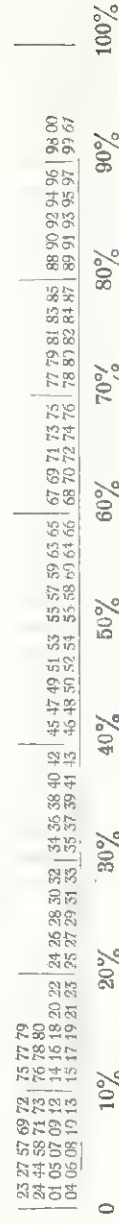
This is one unhygienic condition in the villages which requires for improvement only education and effort, without waiting on complex economic and other improvements.

Table 54
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 65) ABOUT DEFECATION

Maximum score = 75

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

Defecation habits differentiate village and city with complete accuracy. There is not one case approaching an overlap in the two distributions. The culture pattern of these villages is that inherited from the ancient nomadic pastoral life, namely, to rise before dawn, men, women and children, and to go out into the fields to defecate in the open. For personal cleansing, stones, grass, a bit of cloth, or fingers are reported to be used (Form A data). Two thirds of the people report washing their hands on returning, the other third state that they do not wash afterwards. In emergencies later in the day and with little children, any secluded corner or lane among the houses or the stables is used. There is, however, no notion of burying the excreta from flies, or using it for fertilizer. Moreover this was part of the "mores" of the people several thousand years ago in the days of Moses who prescribed an excellent hygienic method (Deuteronomy 23:13). There was not one latrine, privy or water-closet in all of these villages.

In significant hygienic relation to these facts are the findings (from Form A) that over half the people eat with their fingers from the family dish and that not all even claim to wash before eating.

One result of these conditions is seen in the prevalence of typhoid, dysentery, intestinal parasites, etc. One fourth of one sample of stools showed these villagers to have worms of various types, some harboring up to three varieties of flat or round worms simultaneously.

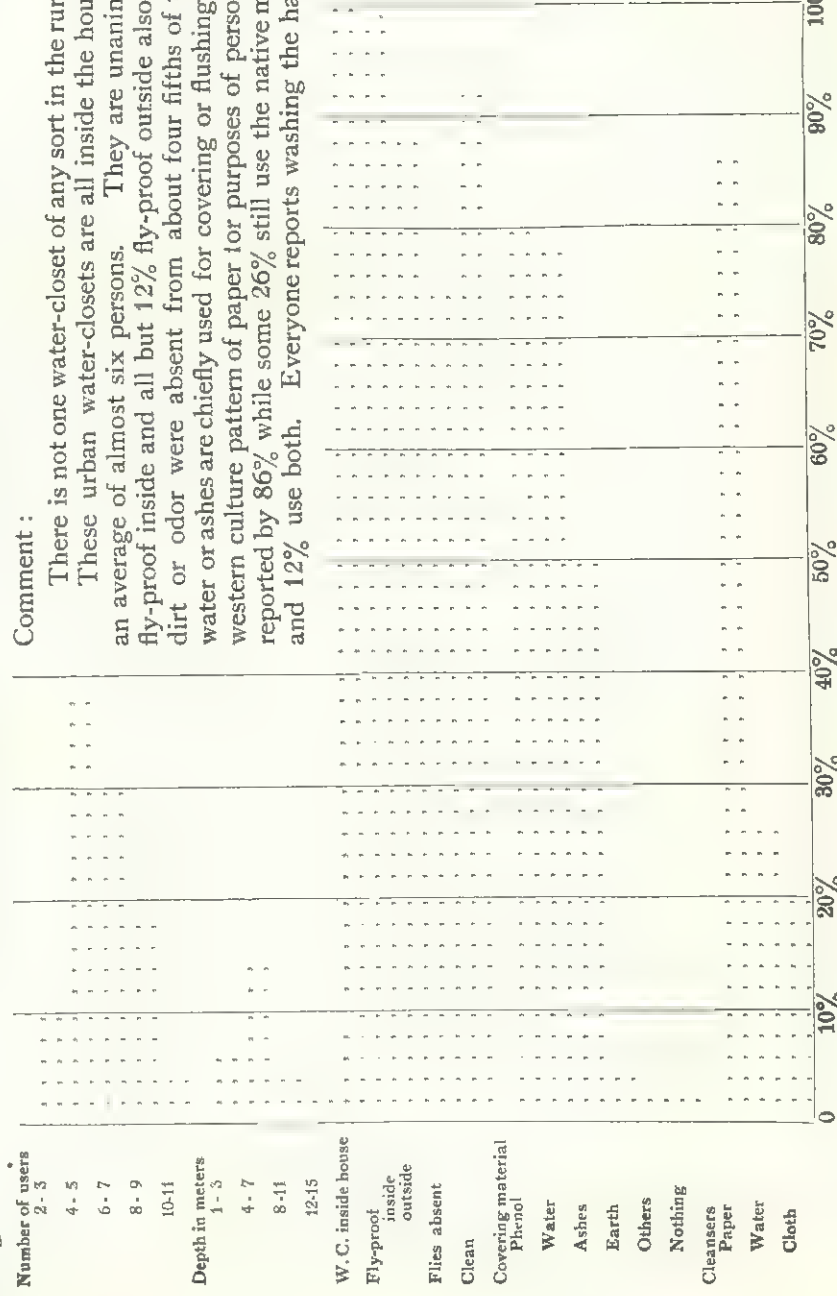
Without a single exception the city people in this sample all have some sort of water-closet.

Table 55
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 66) ABOUT WATER-CLOSETS

Maximum score = 75

The urban sample (N = 50) (each family indicated by two commas)



Comment :

There is not one water-closet of any sort in the rural sample. These urban water-closets are all inside the house and used by an average of almost six persons. They are unanimously reported fly-proof inside and all but 12% fly-proof outside also. Flies, visible dirt or odor were absent from about four fifths of them. Phenol, water or ashes are chiefly used for covering or flushing purposes. The western culture pattern of paper for purposes of personal cleansing is reported by 86% while some 26% still use the native method of water, and 12% use both. Everyone reports washing the hands afterwards.

Table 56
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 67) ABOUT ANIMALS' QUARTERS

Maximum score = 15

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%
Never kept in living room	01 12 25 39 47	53 60 68 80 88	93 95 63		
Opening into living room	11 19 26 45 50	55 67 70 87 91	97 61 66		
Chickens	01 09 14 31 33	56 51 64 83 86	90 94 98 15 55	91	
never enter living room	05 13 16 32 35	42 54 82 85 70	92 95 99 24 61		
	10 13 15 19 28	59 51 55 65 70	90 24 80		
	12 14 16 26 36	50 33 60 68 88	00 59		

Comment: In this rural sample, one half of the families live in the same room with their livestock—sheep, goats, cows, donkey, and chickens. One quarter live in an adjoining room with the stable opening into it. The remaining quarter keep their animals in a separate stable opening into the family courtyard. Yet among the chickens come in and out freely in three fourths of the houses, while one fourth allege that they are excluded.

This intimacy of living with their beasts makes higher standards of cleanliness very difficult. (A few houses keep the animals on a lower level and nearest the door with a raised mud platform for the living room.) The reasons for such proximity are fourfold:

1. Security: In a separate stable it is easier for thieves to steal animals or for village enemies, revengeful in a feud, to poison them. The village watchman is usually inefficient and open to bribery, sometimes being of the rival party in a feud.
2. Cost: A stable costs money for the rafters and labor for the mud walls and roof. The peasant is a tenant and he will not pay, even if he can, for capital improvements, when he may be ousted at any time. The landlord sees no reason for spending money for a stable merely on hygienic grounds, when his tenant is content with the status quo and the livestock are best protected in one room.
3. Warmth: During the winter rains, the warmth from the bodies of the cattle helps to keep the family warm. In giving this up, fuel for a fire is required (or more expense in clothes and bedclothes.) There is scarcely a tree within ten kilometers and no bushes, peat, coal or charcoal. Kerosene is far beyond the villagers incomes—most of them cannot afford even a lamp. They depend on the women to follow the herds and collect baskets, of dung for fuel. This is very limited in amount and arduous to secure. Grape-vine trimmings help in some villages. Afforestation is required, but is not an immediate solution.
4. Custom: The villagers have grown up with the animals and see no reason for changing. Inertia is strong—especially if reinforced by malaria, intestinal worms, malnutrition, and heavy debts. This analysis of the problem should reveal the futility of education alone, unsupported by an attack on the fundamental and interrelated factors of water supply, afforestation, farming methods and equipment, finance, land tenure, policing or arbitral schemes, public health work and motivation to progress.

Table 57
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 68) ABOUT FLOORING

Maximum score = 10

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Mud	01 03 09 11 13	16 18 21 24 26	28 31 33 35 37	39 41 43 46 48	53 56 58 60 62	64 66 68 70 72	74 76 78 80 82	83 87 89 91 93	95 97 99		
Stone	02 06 10 12 14	17 20 23 25 27	29 32 34 36 38	40 42 45 47 51	54 57 59 61 63	65 67 69 71 73	75 77 79 81 84	86 88 90 92 94	96 98 00		
Concrete											
Tiles											
Wood	01 03 05 30 44	47									
Matting, etc.	02 04 06 31 45	49									
	01 04 06 31 33	35 38 40 42 45	49 91 95 97 99								
	02 05 30 32 34	56 59 41 44 47	50 94 96 98 00								

Comment:

The material of which the floor is made is an excellent index of economic and cultural level and often conditions hygiene. The 86% of these villagers, whose houses have mud floors, represent the poorest type of peasants in Syria. Such floors cannot be washed, they harbor fleas and dirt. The matting, if new, is an improvement, but if old, is more dirt-laden than the floor. Stone slabs are common in the mountain villages, but in these plains' villages are out of the question because they require weeks of work hauling on a donkey, plus non-existent stone-cutter's tools and a stone-cutter. Concrete floors are being introduced into the village "manor houses" of the landlords. The League of Nations' Commission for Refugees has built for many of the Armenians in Moushashen houses of concrete, including the floors.

In contrast, these well-to-do city families all have tile floors in most of their rooms, with concrete floors in the others. Some difference in cleanliness between them and the mud floors is automatic, even if there were no difference in rural and urban habits, or water supply.

With the floor go walls and roofs of a like nature. Mud floors mean mud walls (or stone and mud) and roofs of crooked poles, overlaid with matting or brush and topped with two feet of compressed earth. Tile floors mean walls, usually plastered and calcimined, and a plastered ceiling, frequently under reinforced concrete. The floor material was taken in Form B as a representative index of all the house, after trial had been made in Form A of several correlated indices.

Table 58

From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 69) ABOUT

LIGHT FROM WINDOWS

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

Maximum score = 20

Ratio: Window area Floor area	0	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20	Mean ratio	S. D.	Rural	Urban
	01 05 05 07 09 11 13 15 17 19 21 23 25 27 30 32 34 36 39 41 43 45 47 50 52 54 56 58 60 63 65 67 69 71 73 75 80 84 86 88 92 94 96 98 00	78 90	82	79	49 91	77	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91

Comment :

As a satisfactory standard of lighting and ventilation a ratio of 20% of total window area to total floor area in the living room and in the kitchen was adopted, and was given a maximum score of 20 points.

The villages are almost without windows. 89% of the houses had not a window of any sort. Eight houses had from one to seven percent as their lighting ratio. (The three rural families with a ratio of 20% are semi-Bedouins living in tents!)

The windows that exist are pigeon holes about 10 centimeters in diameter and are often kept plugged up with a stone, to keep the cold out in winter and the dust out in summer.

Often the living room is completely dark at noonday and all the work is done within a radius of a few feet of the one doorway. Fleas appreciate this shady environment in summer and utilize it to the full!

In contrast, not a single city house had a ratio of less than 5% and the average was nearly 10%.

To enlarge the windows raises many economic problems. They cannot afford iron bars to keep thieves out, nor wooden shutters (let alone glass panes) to exclude the cold, the winds, or the rains. Increasing the number of pigeon holes on the leeward side is about all that is possible until better agriculture, etc., increases their income.

The floor, walls and roof are predominantly of mud. A few stones and some straw are mixed in. Iron bars, glass and sawn lumber are beyond their means. The door is of wood. There are no windows but only a little hole or two for a smoke vent. As the plain is absolutely treeless, rafters are expensive, and the dome in this type of house dispenses with them. It is built by overlapping each tier of mud brick toward the centre and then plastering the surface with mud. This outside layer is here being renewed after the winter rains.

This "beehive" type of house develops craftsmanship. The interiors are usually decorated with a shelf or two of an elaborately worked design in clay. Whitewashing is also common in these houses.



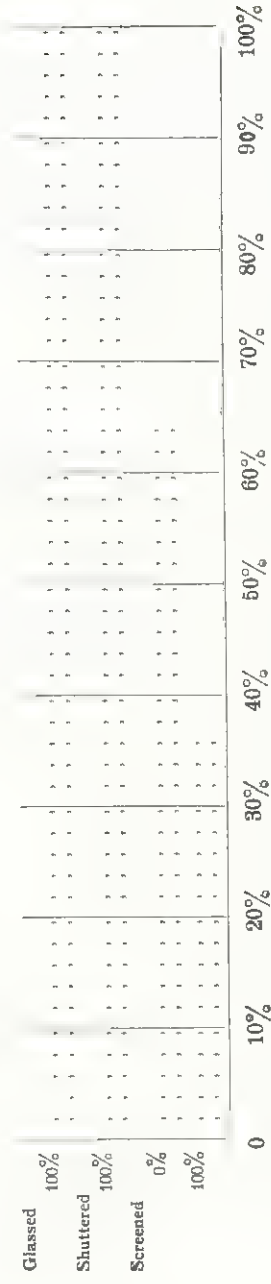
Table 59

From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 70) ABOUT WINDOWS

Maximum score = 15

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

While the rural houses lack windows, the city houses have every window provided with glass panes and usually wooden shutters besides. About one third have screening against insects in addition. These devices for differential control of temperature, wind, light, rain, dust, and insects are taken for granted in the city but are still hampering the hygiene and amenity of life in the villages.

Table 60

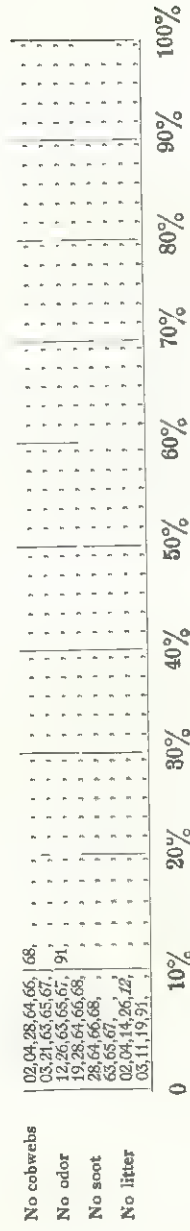
From Section VI

"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 72) ABOUT CLEANLINESS

Maximum score = 4

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)



Comment :

Only one tenth of the village living rooms were free from cobwebs, offensive odors, soot on the ceiling and walls, or unswept litter on the floor. The degree of agreement among these four objective indications of uncleanness is remarkable.

99.5 of these city homes had clean records in these respects. The building materials, presence of chickens and animals, over-crowding, and family habits account for the difference. Reported frequency of sweeping (1.2 times daily on the average) was the same in rural and urban samples (Form A data). In addition to sweeping, the city families report washing their tile floors on an average of once in five days.

Table 61

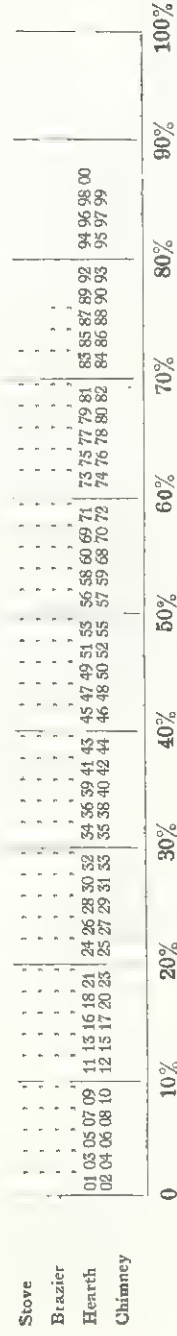
From Section VI

"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 73) ABOUT HEAT

Maximum score = 3

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (each family indicated by two commas)



Comment :

In order to keep warm in the rainy season, about three-fourths of the city-dwellers in this well-to-do sample use stoves or charcoal braziers, but they possess not one fireplace, as that is a culture pattern still limited almost entirely to homes of westerners.

The villagers rely on open hearths for warmth and for cooking. These are often only a spot on the floor, without even a stone to mark it off. There are no chimneys in this rural sample though some exist in nearby villages. The smoke makes the room warmer and eventually filters out doors from under the rafters. Cooking and baking are done outside, under a mud shed in summer.

The hearths are used mostly for cooking. For warmth, the presence of the animals in the same room and the absence of windows serve throughout the winter.

Table 62
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 74) ABOUT FUEL

Maximum score=8

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Charcoal										
Kerosene										
Sticks	08.29 32 34 56	39 41 43 46 50	55 57 65 67 69	74 95 97 99 00	11 13 15 17 20	25 28 34 60 63	73 76 78 80 82	86 88 93		
Wood	18.51 33 35 38	40 42 48 48 51	55 64 66 68 70	94 96 98 100 101	12 14 16 19 24	27 52 59 61 71	75 77 79 81 83	87 92		
Dung cakes :	01.05 21 29 31	33 35 38 40 42	45 47 49 75 76	99 95 97 99 101	74 78 82 84 90					
Home made	02.07 22 30 32	34 36 39 41 43	46 48 50 75 76	94 96 98 100 102	77 80 83 85 91					
Bought	02 04 06 08 13	15 17 19 21 23	25 27 29 31 33	35 38 40 42 44	46 48 51 53 56	59 61 68 71 73	75 77 81 84 87	92 94 97 99 02	88	
	03 05 07 12 14	16 18 20 22 24	26 28 30 32 34	36 39 41 43 45	47 50 52 54 58	60 63 70 72 74	76 80 82 85 90	93 95 98 100 86	91	

Comment :

Rural and urban culture patterns in respect to fuel are very different. Four fifths of the city sample use charcoal and kerosene (primus stoves generally). These are not used by one of these villagers (on account of expense).

Four fifths of the villagers depend on dung cakes. The women and children collect the fresh dung in baskets, mold it into cakes and clap it all over the walls of the house to dry and be stored. Sometimes they are made outside the village and piled in neat rows forming miniature rooms. Preparing the fuel and tending the fire takes about two hours a day of the woman's time. When the drawing of water is added (see No. 44) and the preparation of bread, a large part of the woman's working day is accounted for.

The wood means firewood in the city, but brushwood, and grape-vine trimmings in these villages. Afforestation on these treeless and half-cultivated plains is urgently needed. Trees that demand much water could perform a second function by reclaiming land from the marshy Orontes and reducing mosquito-breeding areas.

Table 63
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 75) ABOUT CROWDING

Maximum score=5

The "normal" rural Arab sample (N = 100) (families identified by number) compared with the urban sample (N = 50) (each family indicated by two commas)

[illegible]

Comment:

The rural sample averaged almost four persons to a room, while the city sample averages less than one person. Contagious diseases have about four times as great a chance to spread through the family in the village as they have in this city group.

group. The typical village house had two rooms, while the typical city one had eight.

The typical village house had two rooms, while the typical city one had eight. The village houses had no bathrooms, no W.C.s or outhouses, no halls, dining rooms, or living rooms separate from bedrooms. The city houses all had bathrooms, W.C.s, halls, dining rooms, living rooms differentiated from bedrooms, and store rooms. Neither the city nor village houses had any cellars, attics, or more than a single floor. The village houses invariably

The city houses all had bathrooms, W.C.s, halls, dining rooms, living rooms uncluttered with furniture. The village houses invariably had only a ground floor, the city ones may have several floors, but each is always a flat for one family (in this sample) no matter how well off.

Table 64
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 76) ABOUT
NUMBER OF SLEEPERS TO A BED

Maximum score = 10

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

Sleepers per bed	0	10%	20%	30%	40%	50%	60%	70%	Rural	Urban
0-.9	12, 34, 37, 47, 16, 36, 40, 49, 07, 24, 32, 35, 45, 17, 29, 33, 41, 46, 02, 08, 13, 15, 20, 03, 10, 14, 16, 27, 05, 09, 21, 23, 26, 06, 18, 22, 25, 31, 01, 11, 37, 88, 04, 48, 67, 88, 77	40, 52, 64, 66, 79, 50, 55, 65, 78, 80, 30, 39, 45, 53, 59, 37, 42, 44, 56, 60, 51, 58, 71, 85, 91, 54, 75, 89, 94, 96	81, 86, 93, 82, 92, 61, 69, 73, 76, 84, 74, 83, 87, 95, 99, 96	90, 98, 97, 00					Mean ratio 2.48	1.1
1-1.9									S. D. .66	.134
2-2.9										
3-3.9										
4-4.9										
5-5.9										

Comment :

The city sample averaged more than a bed apiece, but the rural average was two and a half persons to a bed.

Families were on the floor. The villagers do not put on nightclothes, while washing the bedding, Some rural families denied ever and rise before daylight.

The city people follow the clock and retire and rise later and at a habitual hour, regardless of season. (The scoring formula assigns 10 points according to the ratio of beds per sleeper, modified so as to give maximal credit only when there is an extra bed to enable isolation in sickness or prevent doubling up when a guest comes. The formula grades down from this optimal condition till it gives minimal credit to sleeping three in a bed and no credit for greater crowding:

Example A. 4 beds in a family of 3 give : $\frac{10 \times 4}{3} - 2 = 11\frac{1}{3}$, score = 10, on noting the rules to discard

fractions and to discard points earned in excess of the maximum.

Example B. 1 bed in a family of 6 gives : $\frac{10 \times 1}{6} - 2 = -\frac{1}{3}$ score = 0, on noting the scoring rule that sets the

minimum score at 0.

The formula "beds per sleeper" is the reciprocal of "sleepers per bed" and is used to secure a ratio, the size of which increases as hygienic conditions improve.)

No. 77. Courtyards



This courtyard is typical of Jib Ramli, the experimental village. The walls and houses are of rain worn mud with some stone mixed in. The houses are windowless except for holes for pigeons, etc. There is not one tree or bush or green growing thing in any yard. The winter's fuel is of dung, gathered by the women following after the cattle. Cakes of it are here drying on the walls. The unswept ground shows both human and animal excreta among the litter. The baby sleeps in her cradle in the midst. The flies and the fleas, on account of the strong sunlight, prefer to congregate in the shady interior of the house.

Table 65
From Section VI
"Housing"

DISTRIBUTION OF ANSWERS TO QUESTIONING (No. 77) ABOUT
YARD

Maximum score = 10

The "normal" rural Arab sample (N = 100) (families identified by number)
compared with the urban sample (N = 50) (each family indicated by two commas)

	0	10%	20%	30%	40%	50%	60%
Paved	04,49,	05,	01,05,08,12,	15,17,21,26,44,	52,54,61,71,73,	78,80,86,91,96,	
Fenced	02,04,07,10,13,	16,19,22,35,49,	53,55,70,72,74,	79,84,89,92,			
No human feces	01,11,13,15,17,	20,22,26,28,33,	36,42,52,54,56,	62,64,66,68,82,	84,87,89,91,95,	97,00	
No dung	09,12,14,16,18,	21,25,27,32,35,	40,43,53,55,60,	63,65,67,70,83,	86,88,90,92,96,	98,	
No animal feces	10,12,15,60,91,	93,					
No decaying matter	11,14,53,90,92,	94,					
	01,09,89,91,						
	08,15,90,						
	01,09,11,13,15,	17,19,22,26,51,	53,55,60,65,65,	67,70,83,86,90,			
	02,10,12,14,16,	18,21,25,27,52,	54,56,62,64,66,	68,82,84,87,91,			

Comment :

The unpaved yards of these village families are miry in winter and full of dust from soil and dung in summer. They are used in common by the beasts and the people. The surveyor found that half of them were used as open latrines by human beings. Almost all of them revealed fresh animal excreta, as well as manure heaps and dung cakes.

Pit or bored latrines (as indicated by the soil) are needed, but as yet are unknown.

The city cases which are not indicated on this graph are exceptions, in that no data was secured on them. Their absence does not mean that feces, etc. were found in their yards. In the rural sample, however, the absence of the number denoting the particular family does mean that feces, etc. were found in their yards.

7. Sex hygiene.

(Part II, B, 7)

A large body of data on rural sex hygiene was gathered on Form A and in notes from a few confidential conversations. As these data do not appear in the graphs of Form B (which did not include the section on sex hygiene) they may be briefly summarized here.

Practically every woman over twenty is married and every man over thirty. Coitus is reported by married couples to average around once every four days. Commercial prostitution is non-existent. Other forms of human sex promiscuity are extremely difficult and rare in such small communities where all the family sleep in one room and the women are so closely watched at all times. Masturbation and intercourse by men with female animals was spontaneously admitted by several informants. A sheikh pointed out that it was considered more sinful to have it with animals used for human food than with purely draft animals like the donkey.

All the thirty two Alaouite informants talked freely to the doctor or elderly married nurse and spontaneously offered intimate information as to frequency and methods of intercourse with their wives or husbands without any apparent feelings of shame, reluctance, or resentment, such as would be encountered in American farming families. They looked upon sex as being as completely natural as eating or sleeping and talked about it freely. An example of this is the elder, who on being asked in public what forms of recreation there were in his village, replied, "We are poor people. Only the landlords have amusements and good food. For us there is nothing to enjoy in life but to lie with our wives. It is the one pleasure that neither poverty nor the government can take away from us."

Sex instruction is acquired from intimate contact. The growing children see it in practice in the family and among the cattle. There was no evidence of morbid mystery, repressions, or mental conflicts of a sexual origin, that came to light, although the staff included personnel of specialized training and experience in dealing with such cases.

All the Alaouites and Armenians were circumcised. Among the several hundred men and women given physical examinations by the doctor, only two or three were found to have venereal disease. These cases seemed to have originated in army life

or in emigration. In cases of sterility they depend on superstitious practices and the advice of the old midwives. For contraception they know of only vinegar in a cloth wad, or salt, inserted in the vagina. The women reported desiring to use contraceptive measures more often than the men and usually practiced it without the husband's knowledge. Alum was reported as known to constrict the vagina and to aid a bride who was not a virgin in deceiving her husband.

A few examples of the many superstitious sex practices are:

a. At her first menstruation, a girl should hug a tree for an hour.

b. To relieve her menstrual pains, a girl should drink milk in which the dried umbilical cord of a baby has been boiled.

c. To overcome infertility, a woman should wash her genitals in the water used for a like purpose by a fertile woman.

The above are from the Alaouite villagers. The ones below are from the Armenian villagers.

d. To overcome barrenness, dry cup the small of the back.

e. To become pregnant, apply an egg and flour plaster to the small of the back during menstruation. Then bathe before coitus and nine times out of ten conception will follow.

f. If a Christian woman keeps for thirty days a paper written upon by a Moslem sheikh (presumably with texts from the Koran) and then has coitus daily before midnight, conception will occur.

It may be noted that the overcoming of sterility is the most frequent subject of superstitions.

8. Seasonal differences.

(Part II, B, 8)

The chief differences between the surveys of the experimental village in April and in August may be briefly summarized with a surmise as to the cause of the difference (Form A data).

<i>Summer survey data :</i>	<i>Probable cause :</i>
More frequent washing of clothes and bathing	Seasonal cause — hotter weather, more perspiration, more thirst
75 % more water used.	More mosquitoes.
Number sleeping under nets doubled 22 % to 44 %	
More vegetables eaten	Vegetables & fruit ripen
Average of 10 kinds increased to 13.5	
More fruit eaten	
Average of 2 kinds increased to 6.5	
Less fresh manure in the yard	Cattle sleep out at pasture
More quinine used for malaria	Instruction of the Clinic
Fewer reports of "We do nothing" for sickness	"
More leban diet in diarrhea	"
More purges taken for abdominal pains	"
Some castor oil taken for constipation	"
More washing hands after defecation	"
More children clean their teeth	"
Food more often exposed to flies	?

C. *Summary of Rural Hygiene.* (Part II, C)

The data that has been portrayed in detail in the preceding graphs may now be conveniently summarized in semi-tabular form. First the outstanding features of good hygiene will be reviewed and then the outstanding features of bad hygiene. Side by side with these latter unhygienic features of rural life the same features in city life will be presented for contrast.

1. *Outstanding good features of rural hygiene.*

a. *Abundant sunlight.* This, coupled with the scanty clothing of the smaller children and much outdoor life by all, is a large factor in building health through destroying many types of germs that would thrive in more shaded city tenements.

b. *Uncontaminated water.* Three of the villages and the city secured their water supply from mountain springs. The rest drew from community wells. Although the well water

Abundant sunlight.



Bedding is being aired in the sunlight to drive off the fleas. Sun baths are continuous for the scantily clad toddlers and rickets is almost non-existent. About 300 days of the year are cloudless. Rain in summer is unknown. For dirt and filth in courtyards and streets, the disinfecting power of the sunlight is a strong antidote.

was often cloudy due to fine silt in suspension, it was probably pure. None of the water sources had any human or animal habitation nearby, any W.C. within fifteen kilometers, nor any serious catching of surface drainage.

c. *Ample supply of good milk.* All mothers nurse their own babies fully. Milk products are the second chief article of diet (next to wheat). Goat's milk which does not carry tuberculosis is chiefly used. Everyone boils their milk before using it as a routine.

d. *Isolation from many types of infection.* The villages are a day's walk from the city and an average of an hour's walk from each other. Epidemics are not rapidly spread. Registered prostitutes, the number of whom is steadily increasing in the cities²⁴ and presumably increasing the incidence of venereal diseases, are non-existent in these villages. Hookworm which is also spreading in Syria since the war has not yet reached these villages.

e. *Smallpox vaccinations.* Most of the population have been vaccinated by government doctors within a few years.

f. *Simplicity of diet.* An average of two dishes at a meal and a total variety limited to wheat and milk products with a few fruits or vegetables in season is the normal diet of the peasant. Tea, coffee, alcoholic liquor, opium, are all known but almost unused because of their cost. This simplicity of diet, however, is carried to such an extreme (especially in winter when the same two dishes may be served for twenty one successive meals without a break) that vitamins are often lacking, and so it becomes a somewhat doubtful blessing.

g. *Exercise and natural living.* The women get ample exercise in drawing water, gathering fuel, baking, and in their many other daily duties. The men get intensive exercise during seed time and harvest, and spasmodically at other times, but may loaf for weeks on end between these periods. Hours of sleep are guided by darkness. If one feels ill he curls up in a corner till he feels better. He does not have to punch a time clock or drive himself to work. While villagers share the only universal democracy of possessing twenty four hours a day, they have less with which to fill them. So the whole pace of life is leisurely, with no hurry to overtax the nervous system.

24. Jousselein, J. *Enquêtes sur la Jeunesse Délinquante et la Prostitution au Liban en 1932.* Imp. Catholique, Beyrouth, p. 27.

Insanity is extremely rare, although feeble-mindedness was suspected several times.

2. *Outstanding unhygienic features of Alaouite rural life compared with the urban sample.* (Part II, C, 2)

Rural

Urban

Section II. Remedies for Sickness.

Doctors

A half day's journey to the nearest doctor, usually one of second rate training. Excellent hospitals, free clinics, a Health Center, and a Medical School in the same quarter of the city.

Medicines

Knowledge only of purgatives, quinine, iodine, and asperin—bought by a few occasionally, from the peddler, in unknown doses. Common household medicines in the homes, doctor's prescriptions and several pharmacies available.

For example, antiseptics for cuts are used by : 6 % 92 %

Isolation of communicable diseases

No such thing conceived of for measles, typhoid, smallpox, trachoma, colds, etc.

Inoculation against typhoid

None 32 %

Handkerchiefs, towels, eating utensils

None possessed by individuals, utensils used in common. Universal use by individuals

Section III. Infant Hygiene.

Baths

Twice a week on the average Daily
Several mothers never bathe their babies

Diapers washed

Once in 2.8 days Daily
Cases of changing only once in 24 hours were reported

Rural

Weaning

Urban

Several cases of weaning onto full adult diet (softened in the mother's mouth) at five months.

Section IV. Food and Cleanliness.

Balance of diet

Of the five classes—cereals, milk products, vegetables and fruits, meat, etc., fats and sugars :

2 classes is the daily average Any 4 classes is the daily average

Variety of dishes

2 different dishes per day 6 different dishes per day

Vegetables

On the average only 2 different vegetables eaten during the winter Each family's winter diet averages 12 different vegetables

Cleaning fruit, etc.

5 % wash such fruits, etc., as come from the market 90 % per cent wash fruit before eating

Water supply

18 liters of water a day is the per capita quota Six times as much water is used per capita

Section V. Insects.

Mosquito nets

20 % of the family are covered, on the average 68 % are covered

Flies

90 % are totally ignorant of what conditions breed flies (Not asked in Form A)

Flypaper or traps are unknown 52 % use flypaper (Not asked in Form A)

90 % do not know that flies are a health menace 100 % fly-proof their food between meals

23 % keep their food screened from flies Fleas
69 % report abundance of fleas None report having fleas
60 % are ignorant of what conditions breed fleas.

Rural	Urban
Lice	
Are ignorant of how to get rid of the lice which they admit having.	None admitted having lice
Bedbugs	
63% are ignorant of any bedbug remedy	
Section VI. Housing.	
Garbage disposal	
Thrown into street, yard or field and left uncovered by 100%	Only 10% do so
W.C.'s and defecation habits	
Not one W.C., latrine, or privy of any sort existed in any of these villages. Everyone goes to the fields before dawn.	Every family without an exception had a W.C., usually water-flushed.
A few use their fingers for personal cleansing, while most use stones. About one half do not wash their hands afterwards. About one fifth claim not to wash their hands before meals.	Paper is used by almost all and washing afterwards is claimed by everyone. All wash before meals even though they use individual spoons and forks, and do not eat with their fingers exclusively.
Animals in the living room	
Only 26% live apart from their animals	100% separate
Flooring (also walls and roof)	
All have mud floors, unwashable, also mud walls and roofs	All had glass panes, be- flooring, plastered walls and ceilings.
Light and ventilation	
Not one window with glass or wooden shutter—only small holes in the wall, plugged with a stone.	All had glass panes be- sides wooden shutters.
89% of the living rooms had not a single hole or opening other than the one door	
The average ratio of window to floor area was less than one per cent (.008)	The average ratio was 10 per cent

Rural	Urban
Cleanliness	
90% of the houses had cobwebs, pronounced odor, soot-blackened ceiling, or unswept litter on the floor of the living room.	None of the living rooms were so char- acterized.
Heating	
87% used open hearths, but none had chimneys. The smoke fills the room and seeps slowly out- doors.	72% use charcoal braz- iers, or stoves with pip- ing
Fuel	
82% use dung cakes for fuel	78% use kerosene for fuel
Crowding in rooms	
Average 4 persons per room	Average less than 1 to a room
Average 2 rooms per household	Average 8 rooms per household
Crowding in beds	
Average 2.5 persons per bed	Average less than 1 per- son per available bed
Cases of five in one bed were found; also cases claiming never to wash bedclothes.	
95% sleep in their day clothes	0% sleep in their day clothes
Dirt in yards	
When surveyed, 47% of the yards contained human excreta	None showed this con- dition

PART III.

HYGIENIC PROGRESS

Remeasurement after a Time Interval.

DEFINITION :

The units of a hygiene scale yielding a score, S , were described in Part I. Part II described the hygienic status of various populations, status being defined as the average score, S_i of a group at date i .

A social change, or process, in a population may be measured as the difference between its status at two different dates, $C = S_{ii} - S_i$

If the change is in a direction desired by the population undergoing it, it is here defined as progress.¹ Progress is thus a social process plus a value judgment of the group. (Both of these components may be capable of scientific measurement.)

The amount of progress $C = S_{ii} - S_i$, where $S_{ii} > S_i$ is desirability to group involved.

The rate of progress, $R = \frac{C}{Y_{ii-i}}$, where Y is the time interval of $ii-i$ years between the two dates of measurement.

1. A fuller discussion of these proposals is to be found in a paper "Progress Inductively Defined" by the author, which will appear soon in the *International Journal of Ethics*.

A. Evidence that increase of hygienic score, constitutes "progress" for these villagers. (Part III, A)

Progress is here defined as change that is desired by the group involved. Do these Syrian villagers desire an increase in their hygienic score?

Exact measurement of their desires was not made as it would be a major research project in itself. However, it is believed to be feasible.² For the present study the evidence of the rural desires is less rigorous than would be secured from such a major research but is entirely convincing to those who have personally experienced the villagers' reactions.

1. Verbal evidence.

The quotations in the section on the attitudes with which the peasants received the surveyors contain evidence of the popular desire for greater health. "We are poor but many families would give a gold pound, if your society in America will send Sitt Maslack back to us", one sheikh asserted to the surveyor when Miss Slack was on leave in America and the depression made her return doubtful. As a gold pound would amount to about five percent of the average family's gross annual income, it is a considerable value to offer—even in conversation, regardless of whether they would carry it out.

Uniformly the surveyors met with the prayer to help them heal this sick person or that; to keep so many of their babies

2. The general technic might be to list the chief desires of the village as expressed in conversation and in time or money spent for various purposes. Next the average preferential order of these items would be determined from a canvass. This would involve a carefully developed technic to avoid artificiality and verbalism in response. The illiterate villager is too inarticulate to be able to rank his desires in order of preference. He must be faced with concrete choices that seem real to him. An example of a real choice might be the following: "The Near East Foundation which sends you the Clinic has one hundred pounds to give this village next year. In which one of the following ways would you most like to have the gift come? They could hire a school teacher for all the children between eight and twelve years of age. They could hire a nurse to live with you to care for your sick and teach you to keep well. They could dig a new well. They could set out and fence in a fig orchard with a row of trees for every family. They could send you a sheikh to lead you in religion and repair your local shrine. Or, they could kill sheep and give the entire village two magnificent feasts next year. What shall I tell the Foundation is the gift you want most?" A technic with less dependence on verbalism would be to ask (and test out in practice!) the number of days of labor that each householder would give for each objective: building a clean vermin-free house for the teacher, or nurse; digging the well; planting the orchard; etc.

A number of concrete embodiments of each value (health, education, agricultural income, piety, recreation, etc.) could be devised and inductively weighted from a survey so as to result in a ranking, with a measured reliability.

from dying; or to protect the village from disease. The sheikhs asked for this in open assembly and the housewives echoed the request in private interviews.

A conversation overheard between two Jib Ramli householders reflects light on their valuation of hygiene. The two were speaking of a young Armenian girl, Vartui, who was working for the itinerant clinic in the region. The unmarried Alaouite remarked that he wished he could get Vartui or an Armenian like her for a wife. "But", remonstrated his friend, "she would be too expensive for you. Her price would be at least a hundred gold pounds (\$440.00 at par)". (A wife there normally costs twelve gold pounds). "That's all right", replied the suitor, "I would sell my entire flock and buy her, if she were obtainable." "But how foolish you would be", objected his friend. "What good would she be to you? She is a little, slender, frail thing that could only do the housework. She couldn't carry the water from the village well and she couldn't help you in the fields!" "Never mind", replied the suitor. "I have a donkey for carrying water and I'll do the work in the fields myself. But if I had a wife like that I should have children that lived to grow up. They wouldn't all die as babies as yours have and as everybody's do in this village. She would know how to keep sickness away and I should have grown sons some day. Not only I but all the village would have babies that lived if we had one such woman to teach us. Isn't it worth while doing the field work and driving the donkey for that?"

2. *Behavior evidence.* (Part III, A, 2)

Two villages wrote out formal petitions (with much mental labor) begging for the return of the Clinic and characterizing in oriental style the blessings it had brought them.³

3. A letter to the Near East Foundation :

"On Behalf of the Entire Inhabitants of the
Alaouite Village of Jib Ramli :

"We were greatly honored and delighted with the visit of Miss Slack who was sent by a certain benevolent society, the work of which has greatly contributed to our well-being. We beseech the Almighty God of Abraham and Moses, to keep Miss Slack in good health, and bestow on her all the blessings of humanity and the riches of the universe.

"We should be frank and honest to say that had it not been for her and those working with her, we should have remained in our deplorable and lamentable condition. Since their coming to us, we became insured against poverty and illness, and our bodies were cured of mental and physical diseases. We pray to Thee, O God, that these present conditions may continue as they are, and

When proposals to render the water supply more sanitary by cementing the well-curb in one case and improving the spring in another case were made, the people enthusiastically contributed the labor. The cordial reception unfailingly given to the personnel of the Health Unit and gifts of eggs, grapes, melons, use of rooms, beasts of burden, etc., are further evidences of the value of efforts towards health in the villagers' eyes.

To one who lives among them their desire for health is obvious. But is this desire for health carried over into a desire for hygiene? Again only verbal testimony is available. "Teach us what to do and we will do it, if poor people can", was a frequently reiterated attitude. In general, better hygiene as a means of health is desired, but specific hygienic practices are desired only when the villager is intellectually and *emotionally* convinced that it will lead towards health. Any means of protection from sickness that they really believe to be effective, whether the superstitious old woman's necklace of teeth or oddments bound around her forehead, or the magic "fish grease" (castor oil) of the Clinic, becomes almost as earnestly desired as the disappearance of the sickness itself. Acts believed by them to be health-conducive are valued, and further hygienic acts at present unknown to them will become valued to the extent that they are educated to believe them to be health-conducive. Their desire is educable. What science considers progress they are learning to consider progress also.

B. *Plan of a controlled experiment to produce and measure progress.* (Part III, B)

The conclusion of the preceding discussion is that change towards a better hygiene which is reflected in a higher score is

make happy and pleasant the time of these people for they are the cave of the weak, the rock of clemency and generosity, the tree of all good, and the jewel of gratitude. We sincerely and honestly confess that the presence of these people among us adds to our happiness, and makes life to us more meaningful.

"We feel unable to repay them for their services which have delivered us from the abyss of death as the mediator Moses saved his people from bondage. We, men, women and children are able, however, to pray to God, Father of heaven and earth, to bestow His blessings on them. May He save humanity through them.

"In closing, we thank especially Miss Slack, for had it not been for her and the valuable services she rendered us, our names would not have appeared on the books and records of these noble and great men (the surveyors).

(Signed)
Sheikh Ibrahim el Abbas"

desired by these villagers and therefore constitutes progress as defined in this monograph. The next problem is to measure this progress experimentally.

1. *Outline of the experiment.*

The experiment on rural hygiene reported in this monograph consisted of an initial survey to measure the hygienic status of a group of villages and to divide them into equated experimental and control samples. A two year period of hygienic education by an itinerant clinic in the experimental village followed. Then a final resurvey of all the villages measured the changes in the direction of progress or regress, in the presence of a social force stimulating such progress in the experimental sample and in the absence of such a force in the control sample.

A side study was the surveying and resurveying of an Armenian refugee village in which the Clinic operated intensively. This village was called the "demonstration sample." The experimental technic in this side study was inferior as no similar village existed which could serve as a control.

Part II described the initial survey. The equating of the villages, the nature of the social force brought to bear, and the results achieved or progress made, will be described next in Part III. But first the background of this experiment should be understood.

2. *Relation to a larger project to change rural culture.*
(Part III, B, 2)

At the request of an American foundation, the Department of Sociology of the American University of Beirut had formulated a comprehensive project in rural progress. This intended to combine a welfare demonstration with a scientific experiment in measuring social changes and the forces producing them. The welfare aspect was to attempt to change the culture of an entire village along lines of wealth, health, education, recreation, welfare of women and children, and generalized desire to progress. These changes were: (a) to be conducted in integrated fashion; (b) to be such as were desired by the people; (c) to be as far as possible self-supporting and independent of foreign philanthropy. Detailed programs of steps towards these ends together with the agencies and materials required were tentatively drawn up. Technics for measuring change along all the

possible lines and for measuring the activities of the agencies producing the changes were also formulated in outline. Finally methods for demonstrating and propagating whatever of value emerged from the controlled experiment were mapped out.⁴

The entire project was on such a scale as to require ten years for its execution in addition to several years of preliminary development of technics, trained personnel, etc. The controlled experiment on hygiene reported in the present monograph constituted one segment of the larger project. This segment was explored first for the following reasons: (a) the Near East Foundation offered the cooperation of a Health Clinic which was just being launched in a group of villages which were so isolated as to be well fitted for the project, (b) the desire for health promised the most effective channel for developing survey technics in Syrian villages, training personnel, and exploring the problems.

3. *Criteria for equating the experimental and control villages.*
(Part III, B, 3)

For carrying out the present controlled experiment on village hygiene, the important factors which should be equal, or similar, in the experimental and the control samples were decided upon. They appear in the paragraphs below together with a summary statement of the extent to which this aim of equality was achieved.

The procedure in selecting the actual villages was first a study of the map. Then the government tax and population records eliminated some villages from those which the map revealed as possibilities, even though they fulfilled all the geographic desiderata. The villages considered suitable were then visited. Further elimination resulted from this inspection and preliminary inquiry, because of failure to meet one or more of the criteria which had been established for purposes of the selection.

Four villages were selected and completely surveyed. This yielded eighty three families or twice the number in the experimental village of Jib Ramli. One little village of Sluki with eleven households was eliminated after the survey. The reasons were partly inferior equality (dirtier, water from a spring in-

4. See typewritten volume in the University Library, "Department of Sociology Yearbook", Vol. II, 1929-1930.

stead of a well, etc.) and partly in that its proximity to the demonstration village spoiled it as a control. The people walked over to the demonstration clinic easily in fifteen minutes so that it did not possess the necessary isolation to the same extent as did the remaining three control villages.

It was anticipated that in the control villages, which were under private landlords, there would be much migration of families after each harvest so that it would be necessary to survey a large group in the initial survey, to offset the loss from migration. The event proved the forecast to be correct. Of the forty six families originally in Jib Ramli, forty were found and resurveyed two years later. Of the seventy two families surveyed in the controls exactly forty were still there for the resurvey. This gave samples of equal size. Their equality in other respects is described below.

a. *Geographic factors.* The choice of villages in one natural area, twenty kilometers square, insured a high degree of similarity in both physical and cultural features. The rainfall, altitude, mean temperature and quality of soil were alike for the experimental village of Jib Ramli and the control villages of Hanjur, Dîmu and Asîlî. All had the flat plain for tillage. In site Dîmu matched Jib Ramli, while Hanjur was raised on a mound and Asîlî was on rockier ground.

b. *Demographic factors.* There was no statistically significant difference in death rates, morbidity rates (of malaria, fevers, etc. as reported by the families), birth rates, size of family or age distributions.

c. *Historically,* the past experience of the two samples had been the same except for the government having replaced an individual as the feudal landlord in Jib Ramli as described in Part II, A, 3, c.

d. *Economic factors.* The area of tilled and pasture land, the net income and the amount of debts were not measured, but were estimated to be on the average about the same per family in the two samples. The type of crop, distribution of occupations, amount of taxation, and access to roads and markets were the same. In both samples the peasants were tenants but to different landlords as noted above. In housing, the control sample showed a greater range than the experimental sample. There were more thatched roofs in Dîmu and more houses half underground in rock excavations and more tent dwellers in Asîlî.

e. *Religious factors.* Both samples were predominantly Alaouite, with one or two Christian and one or two moon-worshipping families. In the control sample, however, Dîmu had more Sunni Moslems and Asîlî had several Bedouin (Sunni) families.

f. *Domestic factors.* The status of women and children seemed to be the same throughout. Each sample showed twenty percent of polygynous families. Neither in the occupations and treatment of their women, nor in prices paid for wives, nor in amount of wife-beating, were any differences observed.

g. *Educational factors.* Though no exact data were gathered, the percent of illiteracy for each sex is believed to be about the same in both samples. Schooling was limited in both to a few boys sitting at the feet of a sheikh in an intermittently conducted Koran school. Both samples were equally isolated from influences from the outside world which might tend to educate the adults.

h. *Recreational factors.* There were no observed differences in the customs or recreational facilities of the two samples.

i. *Sanitary factors.* The Orontes with its malarial marshes was exactly equidistant from each sample. A marshy area north of the experimental village dries up before June so that it breeds very few mosquitoes. The villages were selected as having similar water supply from a community well. Toilet habits were precisely the same with complete absence of latrines everywhere. There seemed little to choose between the samples in general dirtiness, whether of faces, or of houses, or of yards. The survey graphs showed that there was no significant difference in such items as frequency of washing clothes, bodies, hands or faces; use of hot water, soap, ashes, etc., in all washing; or frequency of excreta, dung, or garbage, in courtyards and streets.

The mean score on the hygiene scale was 241 for the control sample and 253 for the experimental sample. This difference is 1.07 times its standard deviation and therefore might occur 14 times in a hundred by sampling fluctuations. It is therefore not a statistically significant difference.

In sum then, the first impressions in selecting equated samples for the control and the experimental groups were ad-

mirably verified in the more precise data from the detailed survey. The two samples were highly similar in all respects that might touch even indirectly on the experiment of raising their hygienic status.

C. *The progress produced.*

(Part III, C)

With the foregoing discussion of the plan of the experiment the actual amount of progress produced will be presented. First the qualitative evidence of this progress and then the quantitative evidence will be taken up.

1. *Qualitative evidence of progress from verbal testimony and other indicators.*

Several verbal reactions of the peasants have been quoted in other parts of this monograph which show their appreciation of the progress in health which they believed themselves to be undergoing and the value they put upon the clinical agency producing it. (Part I, A, 3, e; IV, C, 1).

A frequent response to the question, "What sickness do you have here?" was "Praise God, we have no more sickness here since Sitt Maslack came". "What do you do when you get malaria?" "We have no more malaria since the 'hakeemi' (the lady doctor, or more literally, 'the wise one') came to us". "This village (Jib Ramli) is like heaven now". Although exaggerated, these comments, repeated in home after home, do reflect a general attitude.

An elder arose in meeting and among other things observed: "A few years ago we had no little children playing on the streets, or in our courtyards. Our babies all died before they learned to walk. We were childless. But today I have seen thirty toddlers playing in our village. This is the work of the hakeemi. 'Inshallah' (please God) our children will continue to live." Even after allowing a discount for the oriental desire to score an oratorical effect, the murmurs of assent throughout the audience indicated a kernel of real belief in the statement.

The Bedouin sheikh of Asîlî, (one of the control villages) when asked if he had heard of the work of the "white automobile" (the Clinic "healthmobile") in Jib Ramli, became eloquent. "Who has not heard? And who has not known?

In the old days if we journeyed to the mountains and passed Jib Ramli we would avoid it because of its reputation for sickness and filthy water. Now with its new well we go out of our way to fill our waterskins there." The sheikh, while expressing a strong dislike of the missionaries, who were trying to proselytize to Roman Catholicism in the region, extended an urgent invitation to have the Clinic come and do for his people what he believed they had accomplished in the experimental and demonstration villages.

While canoeing down the Orontes to the north of these villages the author, who came as a total stranger with no connection with the Clinic, was informed, "Over there is New Beirut (Moushashen is called that locally on account of its refugees having come from the refugee camp in Beirut and other cities). They don't have as much sickness there as formerly. They have a lady doctor."

While much of this reputation exceeds the facts of health improvement, nevertheless it shows that there has been enough improvement so that the villagers concerned and their neighbors in other villages have noticed it.

But behavior is more trusted as an indicator of attitudes than speeches. Actions speak louder than words. What have the people of Jib Ramli done in the direction of improving their health? Many items appear in the monthly reports of Miss Slack to the Near East Foundation, such as individuals who have learned, at least occasionally, to wash their children's faces, or sweep their dooryards, or to "de-gas" their babies after nursing.

Four actions on a more communal scale in Jib Ramli are significant.

Excerpt from Miss Slack's report for June 1931.

"Well. One day during June, after looking for over a year at the bad condition of the Jib Ramli well, I asked the sheikh, 'If the Near East Foundation supplied the cement, would they give the labor to fix it up?' He said, 'Yes', but seemed a little suspicious. Why would the Americans do this for them? I assured him it was only in keeping with the work I had been doing for them since May 1930. The well was very bad. The women and young children would stand at the brink and pull up full buckets, spilling half in pouring the water into

their individual buckets. The water would flow back into the well from the dirty platform. There was always a miry puddle around the well which was a nice breeding place for mosquitoes.

The next time we went to Jib Ramli we took five bags of cement. The sheikh took it and promised to do what we asked. When we returned to the village we found over fifty men and young women working. They had dug up the entire foundation, and went with our chauffeur to the river to get gravel. The next time we went to the village the well was transformed into a beautiful structure. It is not quite complete, as we want it built high with a pulley and chains, but the cooperation and appreciation of these people were extremely gratifying. Six little boys immediately began washing their feet in one of the troughs. Others were disrobed to take a complete bath. The thanks of all the men and women with the demonstration by the children was worth a great deal more than even forty bags of cement."

Excerpt from May 1932 report.

"*More wells in Jib Ramli.* Besides the central well for which we helped to build a protecting wall, the Jib Ramli people have dug wells in their private court yards. These wells supply water for irrigating small gardens, and washing purposes. We have been trying ever since we came to encourage the people to have their own small gardens, but due to the lack of water we were not successful. Now, with the water from some of these wells, promising small gardens is the result. We hope the village will soon have plenty of vegetables to bring a variety to its diet. Certainly these wells are due to our continued emphasis on having plenty of water."

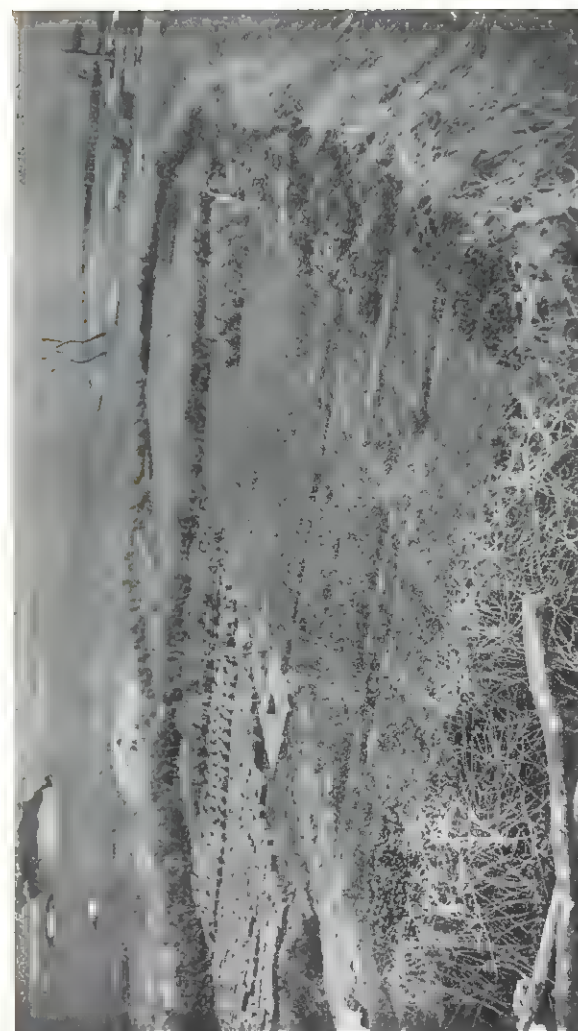
Excerpt from report for October 1931.

"*Schools.* Poor Jib Ramli and the surrounding villages are still asking in vain for a school. Jib Ramli has collected a great number of good building stones which are lying outside the walls of the sheikh's house. These are for the foundation of the school and clinic when Sitt Maslack gives the word to strike ground. Poor Sitt Mislack can do nothing without the shadow even of the person to direct this institution."

Excerpt from report of April 1932.

"*Whitewashed villages.* In our recent visit we found out with joy that yielding to my personal requests and urging,

Progress in diet and water supply



Water and vegetables are two important hygienic needs in these villages. The photo shows a beginning of the solution of these two problems in the experimental village of Jib Ramli ("Sandv Well"). In the right background is the concreted well curb built by the peasants with cement supplied by the Clinic. Behind it is the former marshy area now drained and enclosed with a fence to protect a village nursery (supplementing the two trees of the village that are also in the picture).

Following this improvement the villagers enclosed the plot in the foreground with thorns to keep out goats and chickens. They sank a well in it to enable watering their vegetable plots. Already the village diet, limited to an average of two types of vegetables throughout the winter, promises to be enriched. Beyond the Bedoun tent in the left background a fig orchard, with a row of trees for each family, has been planted by the villagers (under compulsion by the gendarmes!).

two of our villages, Jib Ramli and Sluki in the Masyaf district, had made a thorough whitewashing of all the houses. This whitewashing has been done with a special white soil natural to this district. It was needed especially for the prevention of fleas which crowd these houses when warmer days come. We expect to have fewer fleas this summer. Certainly this shows a splendid spirit of cooperation on the part of the people of these two villages in our program of Health and Betterment for their villages.

"It is extremely interesting to see that the people of these villages have drawn all sorts of fantastic pictures on the white-washed walls. Last year, there was only one house decorated with such pictures, but due to our appreciation and interest in this house the example spread not only in Jib Ramli, but beyond to the surrounding villages.

"*Sample latrine in Jib Ramli.* In our campaign for private latrines for the people of Jib Ramli, we have induced the village Headman to dig his own. The Foundation contributed the concrete cover for it. Now this villager has his own private latrine for his family. The village people witnessing at first hand the convenience and the comfort of having private latrines for their families, now beseech us to supply them also with concrete that they may dig their own private latrines. The inhabitants of this village being Moslems, especially appreciate this privacy for their women."

2. *Quantitative evidence of progress.* (Part III, C, 2)

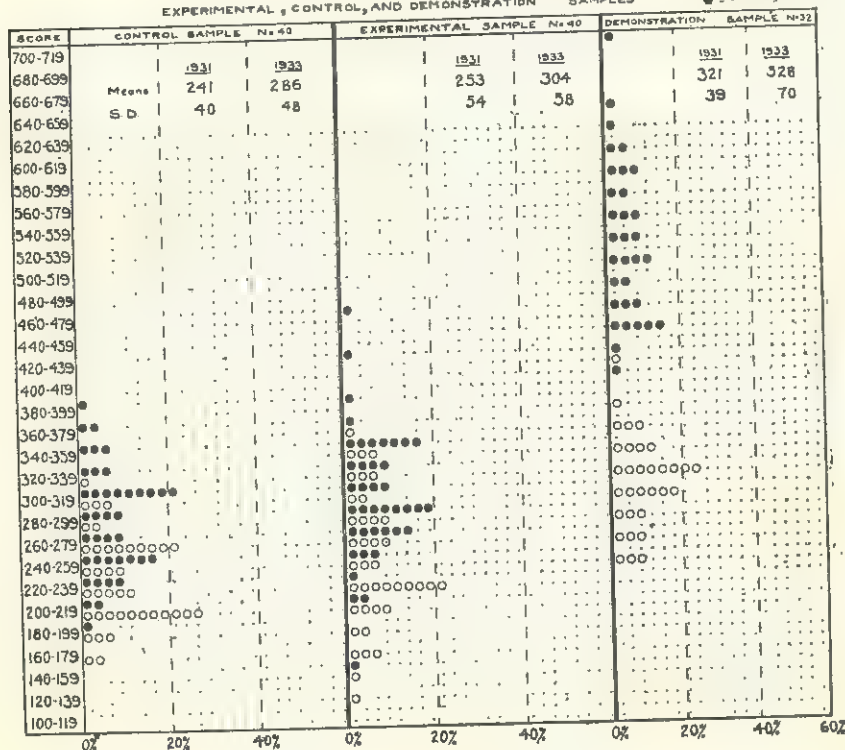
a. *Factual findings.* In the following pages the distribution graphs of the scale scores and of the scores of each of the five sections are compared for the control, the experimental, and the demonstration samples. In each sample the distribution for the end of the experimental period (April 1933) is superposed on the distribution for the beginning of the period (April 1931). The progress of each sample in hygienic score can thus be analyzed in detail as well as seen from the summary which shows the increase in mean scores. Table 72 summarizes the mean scores at the beginning of the experiment, i.e., the hygienic statuses in 1931. Table 73 gives the mean scores at the end of the experiment, i.e., the hygienic statuses in 1933. By comparing these two tables, Table 74 has been made up showing the progress, or gain in score, in the three samples during the two years.

Table 66

SCALE SCORES

COMPARATIVE DISTRIBUTION OF SECTION SCORES
AT THE BEGINNING AND END OF THE EXPERIMENT IN THE
EXPERIMENTAL, CONTROL, AND DEMONSTRATION SAMPLES

Maximum Score = 1000
○ = a family in April 1931
● = a family in April 1933



From these distributions it is evident that :

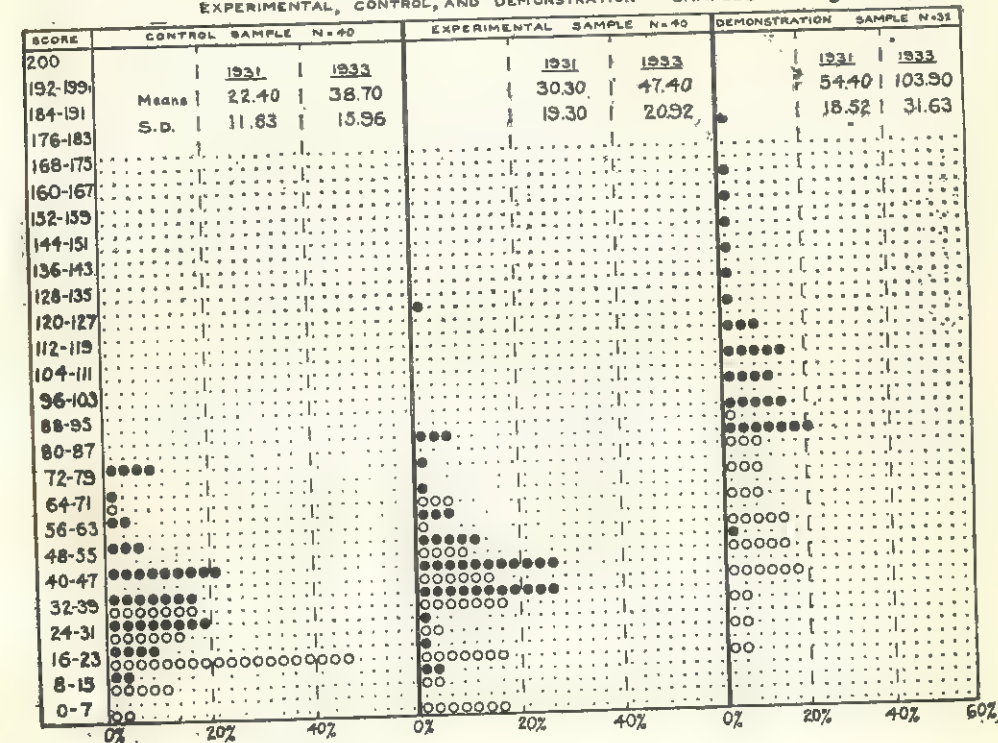
- The experimental and control samples were well equated. The difference in their mean scores in 1931 was four tenths of its standard deviation and was therefore attributable to chance.
- The experimental and the control samples showed increased scores in 1933 which were statistically significant (over 4 and 5 SD of the differences respectively).
- There was no reliable excess gain in the experimental sample over the control sample.
- The demonstration sample progressed handsomely. The 207 points of gain is 37 times its standard deviation.

Table 67

SECTION II, REMEDIES FOR SICKNESS

COMPARATIVE DISTRIBUTION OF SECTION SCORES
AT THE BEGINNING AND END OF THE EXPERIMENT IN THE
EXPERIMENTAL, CONTROL, AND DEMONSTRATION SAMPLES

Maximum Score = 200
○ = a family in April 1931
● = a family in April 1933



The experimental sample is slightly in advance of the control sample in their knowledge and practices for dealing with sickness such as malaria, diarrhea, smallpox, typhoid, colds, measles, sore eyes, and wounds. But this difference between them is not statistically significant either at the beginning or the end of the experimental period. These two samples show an equal and reliable gain in the two years.

The demonstration sample, however, showed three times as large a gain, almost doubling its first score, (from 54 to 104).

Table 68

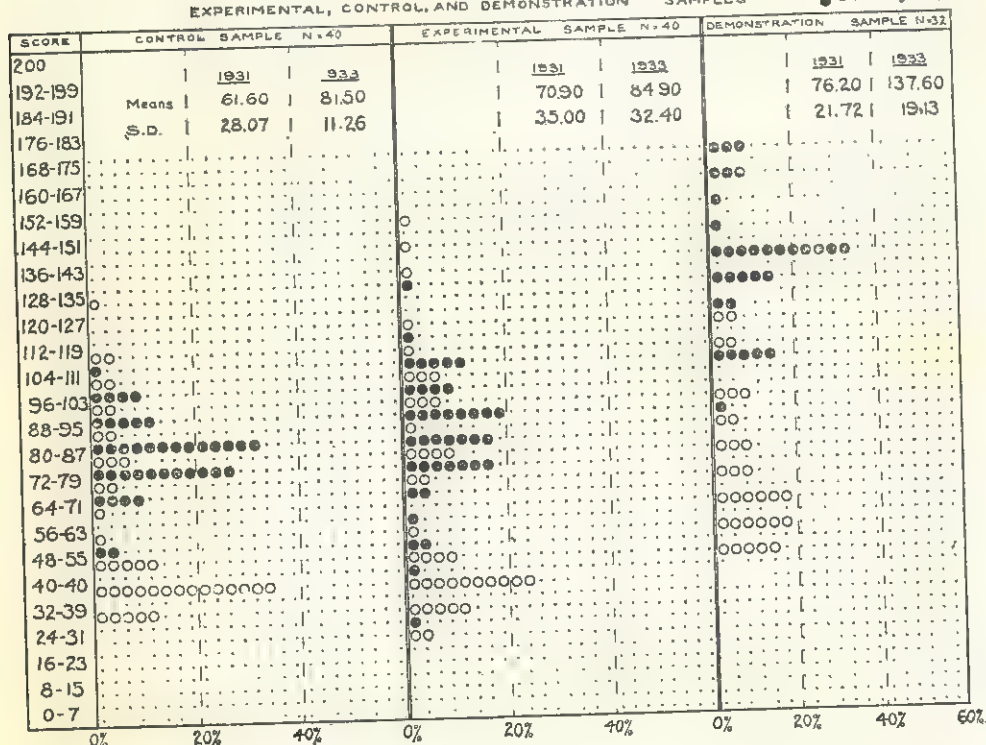
SECTION III, INFANT HYGIENE

COMPARATIVE DISTRIBUTION OF SECTION SCORES
AT THE BEGINNING AND END OF THE EXPERIMENT IN THE
EXPERIMENTAL, CONTROL, AND DEMONSTRATION SAMPLES

Maximum Score = 200

○ = a family in April 1931

● = a family in April 1933



There were no significant differences between the experimental and the control samples either at the beginning or the end of the period in matters of infant diet, cleanliness, or protection from insects and germs.

There were significant gains in each of these samples during the two year period.

The demonstration sample showed more than three times as much progress, increasing its mean score from 76 to 138.

Table 69

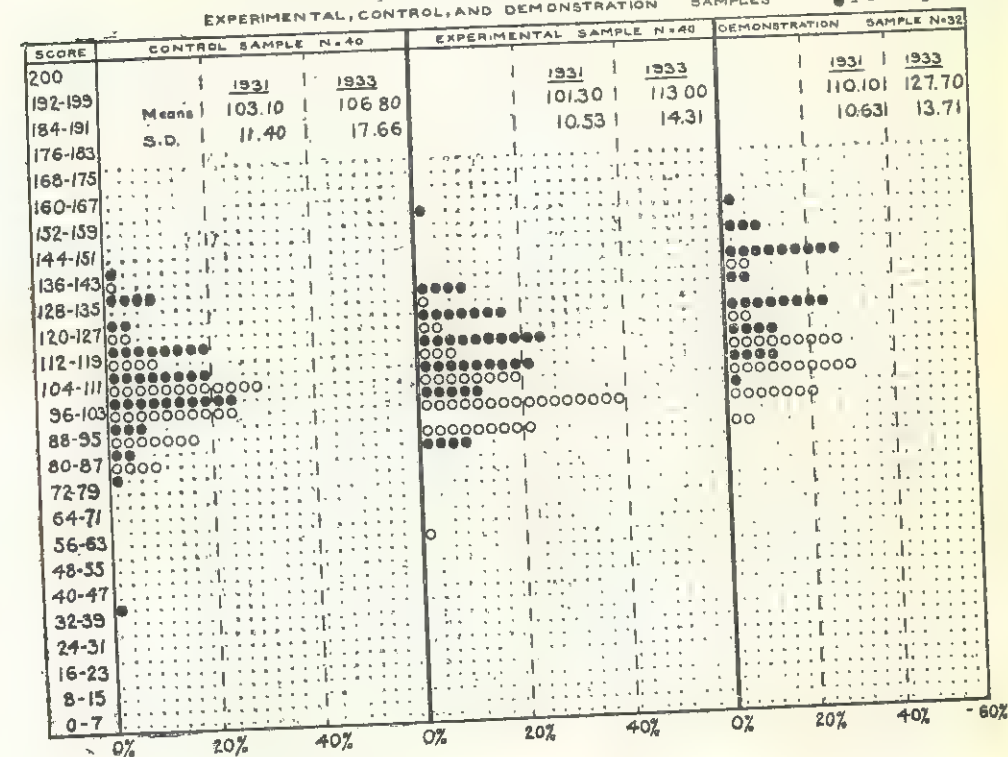
SECTION IV, FOOD AND CLEANLINESS

COMPARATIVE DISTRIBUTION OF SECTION SCORES
AT THE BEGINNING AND END OF THE EXPERIMENT IN THE
EXPERIMENTAL, CONTROL, AND DEMONSTRATION SAMPLES

Maximum Score = 200

○ = a family in April 1931

● = a family in April 1933



At neither the beginning nor the end of the period could the difference between the experimental and the control samples be considered significant in such culture patterns as the balance and cleanliness of their diet, the amount and purity of the drinking water, and their use of soap.

The experimental sample showed a significant progress at the end of the period but the control sample showed no such progress.

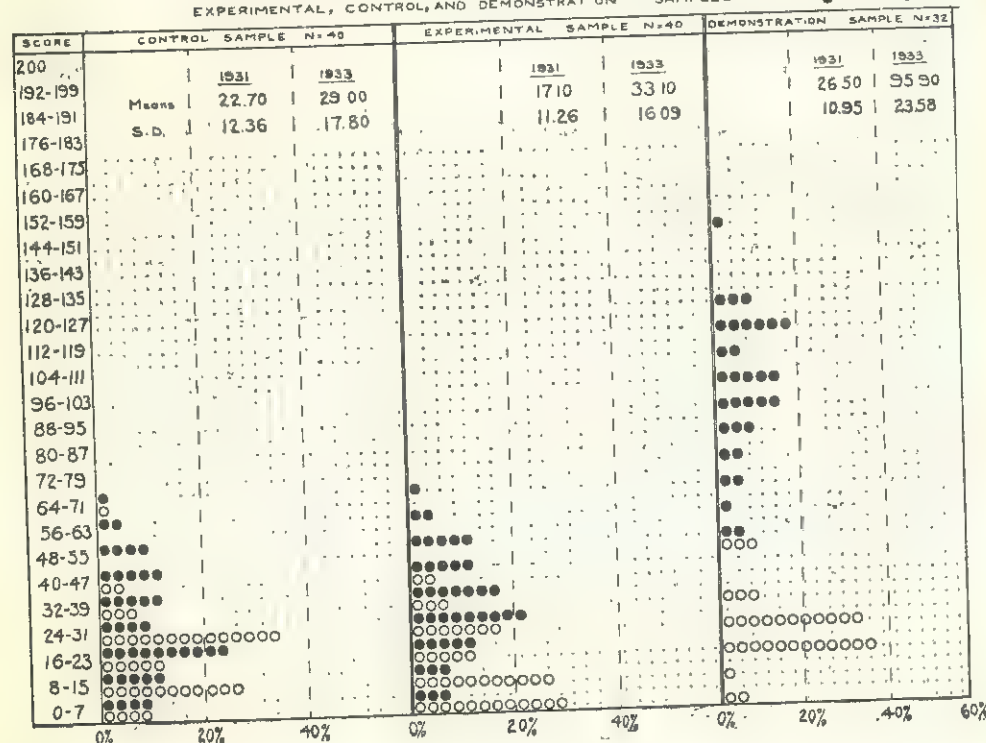
The demonstration sample showed a significant gain during the two years but not as marked a gain as in the two previous Sections.

Table 70

SECTION V, INSECTS

COMPARATIVE DISTRIBUTION OF SECTION SCORES
AT THE BEGINNING AND END OF THE EXPERIMENT IN THE
EXPERIMENTAL, CONTROL, AND DEMONSTRATION SAMPLES

Maximum Score = 200
○ = a family in April 1931
● = a family in April 1933



In knowledge and practice in dealing with mosquitoes, flies, fleas, lice, and bedbugs the people of the experimental sample showed no significant difference in scores from the control sample.

At the end of the experimental period the experimental sample had almost doubled its score while the control sample showed no significant gain.

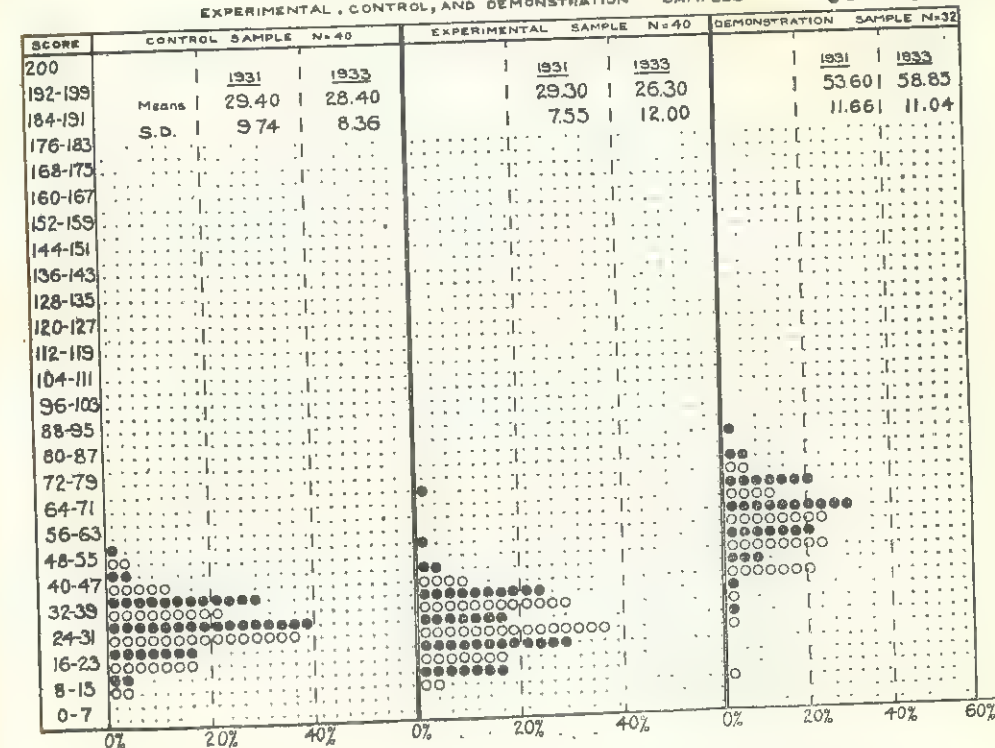
The demonstration sample in the same time gained over eleven times as much as the controls, in almost tripling its own original score (going up from 27 to 96 points). The two highest families in 1931 earned the score achieved by the lowest families in 1933! The progress in this culture complex of dealing with insects was the most striking gain of any hygienic culture complex in any sample population in this two year experiment.

Table 71

SECTION VI, HOUSING

COMPARATIVE DISTRIBUTION OF SECTION SCORES
AT THE BEGINNING AND END OF THE EXPERIMENT IN THE
EXPERIMENTAL, CONTROL, AND DEMONSTRATION SAMPLES

Maximum Score = 200
○ = a family in April 1931
● = a family in April 1933



Under Housing were included such culture patterns as the disposal of garbage and excreta, proximity of stables and living rooms, cleanliness, ventilation, lighting, and heating of living room and kitchen, and crowding of sleepers.

There were no significant differences between the experimental and the control samples either before or after the two year period of the experiment.

Neither of these two samples nor the demonstration sample showed any significant change over the two years. This was the only one of the five sections in which the experimental and the demonstration samples failed to show significant progress.

The culture traits measured in this section are more fully expressed or fixated in material structures of the house and courtyard and so are far slower to change than traits which are more fully expressed in the people's information and habits.

Table 74

HYGIENIC PROGRESS, 1931-1933

Gains in Score, Form B. (Derived from Tables 72 and 73) Mean — Mean
1933 1931

Sample :	In units of points of score, percentages, and standard deviations of differences				
	C. Control	D. Demonstration	E. Experimental	Aug.—Apr. E	E gain — C gain
Scale score in points in % of 1931 scores in S.D. of the gain	45 (SD gain = 8.5) 18% <u>5.28</u>	207 (SD gain = 13) 65% <u>15.86</u>	51 (SD gain = 12.5) 20% <u>4.11</u>	17 1.66	6 (SD diff. in gains = 15.12) 12% (of E gain) .4
Section scores :					
Remedies, II, in points in %	<u>17</u> 77%	<u>49</u> 91%	<u>17</u> 57%	28	
Infants, III, in points in %	<u>20</u> 32%	<u>61</u> 80%	<u>14</u> 20%	32	
Food, etc., IV, in points in %	<u>4</u> 4%	<u>17</u> 15%	<u>12</u> 12%	11	
Insects, V, in points in %	<u>6</u> 26%	<u>69</u> 255%	<u>16</u> 94%	30	
Housing, VI, in points in %	<u>-1</u> 3%	<u>5</u> 9%	<u>-3</u> -10%	0	

— 196 —

— 197 —

Four facts stand out from inspection of the foregoing tables :

(1) The experimental and control samples were satisfactorily equated. The difference in their initial mean scores is about once its standard deviation and is therefore attributable to chance.

(2) Both the experimental and the control samples show significant progress in the two years. The difference between the mean score of each in 1931 and in 1933 is 45 and 51 points respectively. This is about five times the standard deviation of the difference and therefore cannot possibly be attributed to chance.⁵

(3) The experimental sample shows no significant excess of progress over the control sample. The gain in mean score by 45 and 50 points has been virtually the same in both samples.

(4) The demonstration sample shows enormous progress during the two year interval. The gain is 207 points. This is thirty seven times its standard deviation. The two distributions are almost completely separated. The family which in 1933 was the most unhygienic is on a par with the one which in 1931 was the most hygienic—a most unusual degree of progress.

b. *Hypotheses explaining the facts.* (Part III, C, 2, b)

(1) The equality of the experimental and the control samples was to be expected. They were selected for this purpose. The finding merely verifies the excellence of the experimental technic in this case. It makes the experimental results stand out sharply without any need for statistical correlations to allow for an unequal start.

(2) The progress in the control sample is explainable by one or more of the following four hypotheses.

i. It may be due to *diffusion* of the influence of the Clinic. Information given in the Clinic's circuit was carried

5. This progress may in reality be even larger by 11 points. It was found that in the transmuting of Form A data of 1931 into Form B scores a constant error of P.E. = 11 occurred (See Part I, D, 2, f, schedule error). If this were deducted from the 1931 means of Table 72 the gains would be 56 and 62 points. The deduction was not made as it involved depending on the unproved assumption that the sample in which the constant error was reliably isolated may not be similar to these samples here. Also since it would exaggerate the progress its omission is the more conservative scientific procedure.

into the control villages—which after all are only a few kilometers away with peasants often exchanging visits. In support of this hypothesis is the fact that the gain is most on the informational sections, such as “Remedies for Sickness” and “Infant Hygiene”, and is least on the sections dealing with matters of practice, such as diet and housing.

ii. It may be due to *economic and other factors*, such as improvement in the roads. Against this hypothesis is the fact that economic income, which correlated highly with hygienic score fell off during this period. Thus the influence of economic factors was in the direction of loss of hygienic score and not of the observed gain. Furthermore, the improved roads served the control and the experimental sample alike. To attribute the hygienic gain to contacts resulting from better roads, would involve ascribing practically all the gain in the experimental village to roads, leaving none to have been caused by the Clinic. To claim that the roads were more the cause of improved hygiene in the experimental village than a Clinic which preached and demonstrated it there, seems far-fetched.

iii. The progress in the control sample may be an *error of measurement*. But it was experimentally demonstrated that there were no one-way gains, or constant errors on repeating surveys with different informants, different interviewers or different scorers. The types of errors of measurement were then eliminated. The fact that the forms of the scale used in 1931 and in 1933 were not entirely identical may have introduced a constant error. The score of some items not collected in 1931 had to be interpolated. This hypothesis admitted of testing by making up a re-score of only the identical items in the 1931 Form A schedules and the 1933 Form B schedules. The result was to eliminate this hypothesis completely. A correlation of .996 (P.E.=.0006, N=80, S.D.=120) showed that there was no variable error introduced by this transmuting.⁶

“Over-claiming” is another possible explanation of the fact that the score from the second survey is higher than from the first survey. This means that the people tried to make a better showing to “save their face”, and so claimed on the second sur-

6. The constant error of 11 points due to the transmuting process cannot explain the progress of the control sample. For, if those 11 points were to be deducted (as they were not) the progress would be that much larger instead of being explained away.

vey that they did things in more hygienic ways that was the fact. This hypothesis of over-claiming during the second survey assumes that :

- a) They *desired* a better showing at the second survey
- b) They *knew* how to make a better showing.

To the extent that they knew how to make a better showing and earn a higher score they have improved their hygienic status. For hygiene was defined (See Part I, Definition) as *knowledge, practices, and conditions conducive to health*. Although a sophisticated city-dweller may know what is hygienic yet fails to practice it, this knowledge is a stage above the peasant who does not even know what is hygienic and supposes his superstitious unhygienic practices to be right and good.

In the Remedies section, where 17 points of the 45 points gained occurs, the gain is almost necessarily one of increased knowledge of what one ought to do about various sicknesses. Increased knowledge then is not overclaiming but a genuinely improved hygienic status.

But suppose they *desired* a better hygienic status? If true, this desire deserves some increase of score as being a factor conducive to health. But its truth is questioned. For in the first place, they had as much motivation to make a good showing at the first survey as at the second. In the second place, the motivation was not always towards making a better showing. Thus peasants were heard to advise each other in effect, “If we show them that we are poorer and dirtier than the other villages, they may come and help us more, or at least they won’t try to take as much money from us.”

In the third place, such a desire without knowledge often tends to lower the score rather than to raise it. For they believe their superstitious unhygienic practices to be health-conducive and so will exaggerate some unhygienic practice as often as a hygienic one. Thus a surveyor to win *rapport* exclaimed at their cleverness in discovery when the informant reported that dogs’ powdered feces blown into the eyes would help trachoma. Forthwith the informant began to enlarge on this and exaggerate the degree to which they practiced this custom. He had the desire to make a good showing, but without the knowledge it did not raise his score !

In the fourth place in an outstanding case, where they do have knowledge, there is definite evidence that such a desire did

not operate to raise their scores. Thus, if their desire to appear better had increased, it would be natural to expect it to show in the Food and Cleanliness section. Here they can overclaim as to the amount of water and of soap and of varieties of vegetables that they use, and earn a large increase of score. Their practice on these points is more difficult for the surveyor to check by inspection of evidences than is the case in most other practices. Overclaiming cleanliness is further tempting in that their religion lays down many regulations as to frequent washing and even the most superstitious realize that it is "desirable." But the scores for this section show no appreciable increase.

Therefore, the conclusion reached is that overclaiming at the second survey does not account for the increase of score, except in so far as it was based on increased knowledge. But as the only source of such increased knowledge of hygiene was the Clinic this reinforces the first explanatory hypothesis that the increased score is attributable to the influence of the Clinic diffusing over from the experimental and demonstration villages.

(3) To explain the fact that the experimental sample gained an amount equal to the gain in the sample, and not significantly more, two possible hypotheses exist. One hypothesis is to say that the scale did not measure the Clinic's full influence. Undoubtedly the scale does not measure many intangible influences of the Clinic. But any Clinic aiming to improve hygiene in the region must influence those items of knowledge, practice, and conditions which the scale does measure. It is inconceivable that health can be promoted without the villagers knowing what causes their malaria, to cite an example of one of the 55 questions of the scale. To adopt this hypothesis means to say that the Clinic is failing to deal with the most important aspects of hygiene. Those familiar with the Clinic realize that, whatever its efficiency, it is not ignoring these aspects of hygiene.

Another form of this hypothesis is to assert a cultural lag. The Clinic taught them much of hygiene but it will not be evidenced in behavior and material products till later on. There probably is some truth in this view, at least as regards some questions such as those in the Housing section.

The second hypothesis is the Clinic, whatever signal success it has had in creating goodwill and in the field of curative medicine, has educated the experimental sample in hygiene less

effectively than the demonstration sample (20% gain vs. 65%). Its methods have failed to change fundamentally the hygienic knowledge, practices, and conditions of this village in these two years. This explanation is preferred by the writer, based on his knowledge of the Clinic. While paying high tribute to the curative work of the Clinic and to its educative value in the demonstration sample, its methods and equipment were inadequate in the experimental sample. The nurse could not speak Arabic. She had no posters, slides or literature in Arabic or adapted to the local culture. The people received no systematic instruction and no instruction reaching the mass of them. Individual patients received advice, diluted by translation, on their particular need of the moment. But no technic was employed to see that *every* person was told or shown *every* point of some minimum body of hygiene knowledge, such as was represented by the questions of this scale. The half dozen stereopticon talks and a few mothers' meetings and the home visits were not sufficient for the purpose. The experimental village received about one fourth⁷ as much of the time and attention of the Clinic's personnel as the demonstration village received.

(4) The fourth fact to be explained was the phenomenal increase of hygienic score in the demonstration sample. Again two, and only two, hypotheses seem reasonable. The first is that the Clinic was here highly successful in educating the Armenians to better hygiene. The Clinic personnel lived in this village. All but the American nurse were Armenians, speaking fluently with the villagers and in contact with them all day long. Besides the individual advice to patients seen (and these numbered four times those of the experimental sample of equal population) there were *regular* mothers' meetings with full attendance of *all* the adult women of the village and more systematic instruction. There were the regular meetings for girls and *daily* nursery school for *all* the little children. There were more frequent gatherings of various sorts including those for stereopticon talks. The headman "hung around" the Clinic much of his free time and energetically tried to enforce whatever he there learned to be conducive to health in his flock. The people were better educated and more receptive to believe what the Clinic personnel taught them. They had changed their environment several times in the previous decade and had been

7. See Table 76.

forced to adjust themselves to new conditions. This tends to break up old folkways and make new ones easier of adoption. Altogether there is every reason to believe that here the Clinic was highly successful in its educative function of preventive medicine as well as in curative medicine.

A second hypothesis is that factors other than the Clinic were also causes of the progress in hygiene. The newly established colony was becoming more settled, families unadapted to the pioneering rural life were eliminated and had returned to the city, the flocks and herds and area under cultivation had greatly increased, and the morale of the people was steadily improving. Relatives from America came as visitors for months at a time, a regular Armenian journal was read, books and letters from the outside world came in occasionally. All these factors and others, but especially the economic prosperity, are believed by the writer to be partial causes along with the influence of the Clinic in producing the tremendous progress in hygiene that was found. As there was no control village to match with this village and to make possible the measurement of these general factors, isolating the clinic factor, these two explanations cannot have any definite percentage of the credit assigned to them.

c. *Formulae summarizing the facts.* (Part III, C, 2, c)

Progress was defined as the difference between the status or average score of a group at one date and its higher status at a later date.

$$\text{Status} = S_i = \frac{\sum s_i}{N} = \text{average score on date } i$$

$$\text{Amount of Progress} = C = S_{ii} - S_i \quad \text{where } S_{ii} > S_i$$

If $S_{ii} - S_i$ is negative, the social process has been regress, not progress.

The application of this formula to the present data is presented and discussed in detail in connection with Tables 72 to 74.

The time rate of progress in terms of year units is :

Rate of Progress = $R = \frac{C}{Y_{ii-i}} = \text{the social change, or the difference in statuses divided by the difference in their dates. Since } i = 1931 \text{ and } ii = 1933, Y = 2 \text{ in this experiment. Therefore, to ascertain the rate or velocity of progress in these samples the amounts of progress in Table 74 may be halved to}$

read points of score progressed per year. Thus the control sample progressed at the rate of 22.5 points per year, the experimental sample at the rate of 25.5 points per year, and the demonstration sample at the rate of 103.5 points per year.

The reliability of the observed progress is measured by its standard error which depends upon the size of the sample population and the dispersion of its scores. The standard error, S.D., of c is the standard deviation of a difference between two means.⁸

$$SD_c = \sqrt{SD_i^2 + SD_{ii}^2 - 2 SD_i SD_{ii} r_{i,ii}^9}$$

$$\text{where } SD_i = \frac{\text{SD of the distribution on date } i \text{ or } ii}{\sqrt{N}}$$

$$\text{and } \text{SD of the distribution} = \sqrt{\frac{\sum s_i^2}{N} - \left(\frac{\sum s_i}{N}\right)^2}$$

s being the score of a family and N being the number of families in a sample.

Any observed amount of progress is conventionally considered to be statistically reliable if it is at least three times its

8. For the benefit of the non-statistical reader, the standard deviation of a distribution measures the extent to which the scores of a distribution deviate on either side of the mean score. It indicates whether the scores are compactly grouped about the mean or rare widely dispersed on both sides of it. To get its value the square of the mean score is subtracted from the mean of the squares of the scores and the square root of this difference is the standard deviation of the distribution of scores. To get the standard deviation of the mean (score), the standard deviation of the distribution is divided by the square root of the number of cases yielding that mean. Finally to get the standard deviation of the difference between the mean of the scores on date i and the mean on date ii , the two standard deviations of the means are combined (as indicated in the first formula in the text) with each other and with the correlation coefficient, r , of the i series of scores and the ii series of scores.

The standard deviation of the mean (or of the difference of means, or of any index) measures the extent to which the mean may be expected to vary if redetermined from many sample populations, each composed of N individuals. For redeterminations of a mean from different samples will give means differing slightly from each other by chance fluctuations. These means will form a frequency distribution of means having a standard deviation of the means about the mean of the means, or the "true" mean of the entire population from which samples were drawn.

Given an observed mean and its standard deviation (calculated from the formulae above) it is possible, with the aid of a table of the probability integral, to read off the probability that the observed mean will differ by any specified amount from the "true" mean. This probability is the reliability of the mean as it indicates how likely it is to have arisen by chance and to be different in another sample.

9. The correlation coefficients called for in this formula between scores in 1931 and in 1933 were .00, .19, and .25 for the experimental, demonstration, and control samples respectively.

standard error. This is called the significance ratio = $SR = \frac{C}{SD_c}$

If $SR = 3$ the probability of the observed progress being due to chance or fluctuations of sampling is slightly more than one in a thousand. This is so improbable that the observed difference, C , can be considered significant or reliable.

These significance ratios in the three samples are 5.28 for the control, 4.11 for the experimental, and 15.86 for the demonstration sample. All these gains, therefore, are highly reliable.

One further step remains in this mathematical analysis of progress. This step is to get the net progress in the experimental sample which is due to the Clinic, as distinguished from the observed or gross progress which is due to the Clinic plus all other general factors in the control sample. The net progress is the difference between the gross progress in the experimental and in the control sample, $C_e - C_c = c_e$, when C_e denotes gross or observed progress in the experimental sample, C_c similarly in the control, and c_e the net progress due to the Clinic. The figures are: $51 - 45 = 6$ points of score.

The reliability of this net progress when measured by the standard deviation of a difference of the second order

$$S.D. \frac{C_e}{c_e} = \sqrt{\frac{S.D.^2}{C_e} + \frac{S.D.^2}{C_c}} \text{ becomes } \sqrt{12.5^2 + 8.5^2} = 15.12$$

On dividing the net progress of 6 by its standard deviation of 15 points it is found that the net progress is unreliable, as the significance ratio is .4. Net gains as large, or larger than this, may occur by chance in sampling about 70 times in 100.

The conclusion then is that, as measured by this scale, the gross amount of progress which was caused presumably by the Clinic in the experimental and control samples was significant. It was an increase of about 20% in score. The net amount of progress which was demonstrably caused by the Clinic in the experimental sample in excess of the progress in the control sample is small (2%) and unreliable. More time and effort by the Clinic were needed for effective results in the experimental village.

D. Conclusions from the Data on Progress. (Part III, D, 1)

1) It has been demonstrated that quantitative controlled experimentation on whole villages can be satisfactorily carried out in backward and remote districts of the Near East.

2) Verbal statements of attitude and other qualitative indicators show that people in these and in neighboring villages both recognize that hygienic progress has been made and value it highly.

3) Table 74 summarizes the quantitative facts as to the existence, amount, and reliability of progress in the hygienic culture complex measured by the scale and by each of its five sections. It also shows the comparative progress of the control, the experimental, and the demonstration samples.

The chief conclusions, which are statistically significant, to be drawn from these data are the following:

a. *A reliable amount of progress is shown in the control sample.* [There was a gain of 45 points on the scale as a whole, and a gain on four of the five sections. 51 points means a gain of 9% a year over the original hygiene score of 241.] Of the various possible explanatory hypotheses that of diffusion of information from the Clinic, which carried on work in the other samples, is preferred for reasons stated.

b. *Slightly greater progress is shown in the experimental sample.* [There was a gain of 51 points on the scale as a whole, and a gain on four of the five sections. 51 points mean a gain of 10% a year over the original hygiene score (253).] That the Clinic caused this progress is the only hypothesis consistent with the facts. That the progress was not greater is attributed to the fact that the Clinic spent only about one sixth of its time and effort here as compared with about four sixths in the demonstration sample.

c. *An extremely large amount of progress was shown in the demonstration sample.* It gained 207 points or 33% a year in average score in the two year period. This difference was thirty seven times its standard deviation! The initial and final surveys showed only one case of overlap—the best family score of 1931 being the same as the worst family score of 1933.

This progress is attributed mostly to the Clinic, but economic and other factors were also partial causes. The absence of a control sample, matched with this demonstration

Armenian refugee settlement, prevented measurement of the relative contributions of the Clinic and of the other factors in this village.

In this experiment, in which the social force brought to bear was purely an educational one, ideas changed most, while habits changed less or with a lag, and the material embodiment of the new ideas (such as in better housing) resisted change most of all.

PART IV

HYGIENIC FORCES

Measurement of the Factors Producing Progress

DEFINITION :

The first three parts of this study have defined the hygienic unit, s , and its compounds in the concepts of hygienic status, S , and hygienic change, C , which, if desired by the group undergoing the change, is progress. If now the time rate of progress, R , is increased, or decreased, progress is "speeded up" or slowed down. This acceleration of progress is defined as $A = \frac{R_2 - R_1}{Y}$, the annual amount of change in the rate.

The acceleration of social change in a population is conceived of as a social force. It is whatever causes a speeding up of change among people. *Social force is here defined as the product of the acceleration and the population accelerated,*

$$F = AP$$

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A. *A theory of the measurement of social forces.* (Part IV, A)

The concept of social force, borrowed from physics, is often used by sociologists and others. Its meaning is unstandardized and lacks precision. It is here proposed to attempt to standardize it and to render it precise through a system of concepts whose units and relations in equational form can be objectively and exactly defined. The following exposition is a bare outline of the proposed theory. Its fuller elaboration, reference to the literature in the field, and application to diverse examples are reserved for another place. Only the essentials of the theory will be stated here in order that its application to the data of the controlled experiment under discussion in this monograph may be clear.

1. *A proposed system of concepts defined by equations.*

a. *The three basic units.*

(1) Population, P. The first basic unit in social phenomena is seen as an individual. The quantitative aspect of population, or the number of persons involved, is an important aspect, whether implicit or explicit, in social studies. This unit may conveniently be denoted by the letter P. Although individuals are unequal yet, for *measurement of the group*, the average individual may represent every individual in that group.

At present this unit is relative to the group, but eventually as samples cumulate in sociometry the average of them all will approximate the average of the whole human population which would be the ideal standard unit of population. Meanwhile as long as conclusions in sociometry are limited to the group measured or to very similar groups, and not claimed to be universal, the average of the individuals in the sample measured is a satisfactory standard unit.

A person in this hypothesis is analogous to the unit of mass in the gram-centimeter-second system of physics.

(2) Indicia, I. The second basic unit is seen as an amount of some phenomenon characterizing a population. It may be its death rate, per capita income, score on a hygiene scale, rank in respect to other groups, index number with respect to some previous period, correlation coefficient expressing the relation of one phenomenon to another in the group, or some other statistical expression. If a scale of units exists by which the amount of any phenomenon in a group can be measured, then

those units may be termed "indicia". The number of indicia that characterizes a group may be defined as its *status* in respect to that type of indicia. In the present study the average hygiene score $\frac{\sum s_i}{N}$ of a group was its hygienic status, S, at the date of

that survey. i, ii, iii and iv denote dates of surveys.

It is immediately obvious that the indicia are not of one kind but of many kinds. There will be as many such units as there are measurable phenomena in a population. The proposal here is to unify the *class* of such units with a general concept. While status denotes a group's amount of such units, it may be useful to coin a term to denote those units in general. "Indicia" will serve to denote units on any scale which is applicable to a population (other than the number of the population and excepting time units). Any statement of a group's status, or number of indicia, will have to specify further the type of indicia used, i.e., the particular scale, index, or measuring instrument. Each such measuring instrument defines a line in social space; an indicium is one unit along that line; and status is a point on that line (defined as a certain number of indicia from a standardized origin).

Indicia are analogous to the unit of distance in physics. But instead of a physical three-dimensional space, society moves in an n-dimensional social space where n is all the millions of lines along which society may change (or remain static).

(3) Years, Y. The third basic unit is that of time. For social phenomena the year is the most convenient unit. A period of years may be denoted by the symbol Y_{ii-i} in which the subscripts denote the final and the initial dates respectively.

b. *Compound units.* (Part IV, A, 1, b)

From the basic units of population, indicia and time the following social concepts may be compounded and defined.

(1) Change, C. Social change may be defined, wherever measurable, as a difference between the status of a group at one time and at another time. $C = S_{ii} - S_i$. A social process is conceived of as such a change going on.

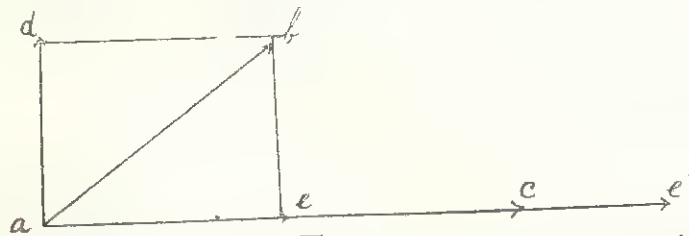
An important special case is that of progress. As defined in Part II, any social process, or change, which is desired by the group undergoing it, is defined as progress. By this supposed judgment of value, a social process may become progress, or regress. The symbol $C+$ might denote progress as a positive

$$\text{Social force} = F = \left(\frac{S_{iv} - S_{iii}}{Y_{iv-iii}} - \frac{S_{ii} - S_i}{Y_{ii-i}} \right) \frac{P}{.5Y^1_{(iv+iii-ii-i)}}$$

It should be noted that force, although a cause, is defined in terms of effects not in terms of causes. Physics similarly defines force in terms of acceleration times the mass accelerated, not in terms of specifications of the engine which caused the mass to accelerate its motion. A given physical force may be developed by a steam engine, dynamo, or other prime mover of a great variety of specifications and efficiencies. Similarly a given social force may be generated by an enormous variety of agencies ranging from human organizations with personnel, equipment and budgets, to climatic conditions.

Social forces may be physical, biological, or social in origin but as they all act on the body and its neural receptors they are forms of stimulation to which the individual responds in some way. *The unit of social force may be christened a "stim", a unit of stimulation, and defined as one person changed one indicium per year per year.* The measuring instrument, or scale, which defines the particular indicia would then have to be specified and would thereby specify this particular kind of "stim".

Social forces have a directional aspect just as in the case of acceleration and progress. They may be positive or negative, they may reinforce or oppose each other. When geometrically represented as lines two forces may go in the same direction, or be diametrically opposed or meet at angles. When they meet in an angle either force can be resolved into a neutral or independent component and a component which is either positive or negative, reinforcing or opposing the other.



1. The derivation of this term may not be clear. If the date of each velocity were given inside the parenthesis it would be a simple matter to get the difference in velocities and divide it by the time interval given as the difference in dates. But the date of each velocity is not given, but only the terminal dates in dates. If velocity changes during a period, the mid-point of the period is the best date for the average velocity. The term $.5Y_{(iv+iii-ii-i)}$ accomplishes this as it means $\frac{\text{date iv} + \text{date iii}}{2}$

$\frac{\text{date ii} + \text{date i}}{2}$, or the interval in years between the mid-date of the first period and the mid-date of the second period.

Thus if a force whose amount and direction is given as ab meets a force whose amount and direction is ac, the former can be resolved into one component ad, which is independent of ac and a second component ae which adds to ac, making its total amount and direction now represented by ae¹.

To fully understand the concept of social force its corollary concept of resistance, or opposing forces, must be understood. Resistance may be the normal inertia of human beings to change their habits, or it may be actively opposing forces such as prejudice, lack of communication, lack of funds, or disbelief in the objectives, methods, leaders, etc.

(6) Impulsion, Im. One further compounded concept seems useful. A social force acting for a period will give a certain impulsion or impetus to the group on whom it is acting. Impulsion is then defined as the product of the force and the time through which it acts.

Impulsion = Im = FY The physical concept of impulse was a historical accident which many physicists point out is a misnomer in implying too momentary a period for the action of the force. It is therefore modified here to preserve the root idea without this limiting connotation.

Impulsion is a concept of the same order (or dimensions in physical terms) as momentum. Momentum is a concept in the progressive tense denoting a change going on in a group, while impulsion is a concept in the past tense denoting a change accomplished in a group.

(7) Other possible compounded concepts. It may prove useful with the development of the social sciences to standardize social concepts analogous to the "work", "energy" and "power" of physics. Thus a force which accomplishes a certain change in a population would be termed social work and the capacity for such work would be social energy. The rate of doing such work would be social power. At present, however, social accounting has not reached a point where such refinements seem to be significant in practice. The only justification of scientific concepts is their usefulness first in measuring and understanding and later in controlling and predicting phenomena. Furthermore, the temptation to follow physical analogies beyond the point of appropriateness to social phenomena should be guarded against.

(8) Probable errors, P.E. The determinations of the indicia and the compounds involving indicia are statistical observations, which are normally derived from a sample of a larger population. They are thus subject to fluctuations of sampling which are measured under conditions of random sampling by the probable error formulae. Probable error formulae should therefore be derived for all the compounded concepts. The probable error of a change is the usual formula for the difference between means,

$$P.E. = .6745 \sqrt{\frac{SD_{ii}^2}{S_{ii}} + \frac{SD_{i}^2}{S_i} - 2 \frac{SD_{i} SD_{ii} r}{S_i S_{ii}}}$$

where SD is the standard deviation of the mean score, i.e. status i or ii , and r is the correlation coefficient between the two measures denoted by i and ii .

The probable error formulae for the rate of social change, acceleration, momentum and social force have not been rigorously derived as yet. The tentatively derived formulae are not published here as they are in process of being critically reviewed by statisticians abroad.

2. Discussion of the proposed system of concepts. (Part IV, A, 2, a)

a. *The problem of the plurality of indicia.* It was stated that there might be as many kinds of indicia, or units measuring social status and change, as there were ways in which society may change. These are geometrically represented by lines in n -dimensional (social) space. Under certain conditions it is mathematically possible to unify these in a coherent system. Thus one technic is through the theory of correlation coefficients and determinantal algebra. Suppose two traits have been measured in a population and the correlation coefficient between them has been determined. Then the traits may be represented as lines which meet in an angle whose cosine is that correlation coefficient. On measuring other traits in the same population and calculating all possible intercorrelations between pairs of traits, it becomes possible to determine the angle of every line with every other one in n -dimensional space, where n is the total number of measured traits. From the table of intercorrelation coefficients an algebraic determinant is derived which specifies the position of every trait line relative to all the others.

It is then possible to reexpress each trait in terms of n other mutually independent traits by means of appropriate transformations of the determinant. These new independent traits, or factors, are represented by a sheaf of lines all with a common point and all mutually at right angles to every other line in n -dimensional space. These new traits, or factors of the observed traits as they may be better termed, are independent, do not overlap, and among them completely determine without any residue the original observed traits. As such factors become well-known and standardized they may gradually displace classifications of social phenomena that are now current, just as the conceptual analysis into molecules and atoms has proved superior to the naive naming of all substances as observed in nature. Already in some sociometric fields such factors are in common use. Thus, for example, in the field of psychology, the general factor, g , is growing in use as a precise definition of the general intelligence factor common to a group of verbal intelligence tests.

Other attacks on the problem of reducing groups of observed traits to orderly systems of elemental factors are being made.² Crucial mathematical tests exist for the existence of a general factor common to all of a set of traits measured on one population.³ Crucial tests exist for the presence of factors specific to each trait of such a set.⁴ Crucial tests exist and are being enlarged for the presence of some of the intermediate orders and arrangements of factors between the specific and the general.⁵ These tests are too technical to discuss here. The point they illustrate is that the present confusing variety of indicia are steadily being interrelated and integrated in harmonious conceptual systems with the progress of the social

2. For example, Kelley, T. L., *Crossroads in the Mind of Man*, Stanford University Press, 1928, pp. 238.
3. See Spearman, C., *The Abilities of Man*, Macmillan, 1927, pp. 415, and for a review of this theory, Dodd, S. C., *The Theory of Factors*, Psychological Review, May and June, 1928.
4. See Dodd, S. C., *On Criteria for Factorizing Correlated Variables*, Biometrika; Vol. XIX, Parts 1 and 2, July, 1927.
5. See, for example, such papers as the following: Black, Thomas P., *Mental Measurement: The Probable Error of Some Boundary Conditions in Diagnosing the Presence of Group and General Factors*, Proc. Roy. Soc. Edin. Vol. XLIX, Part I, No. 6, 1929; Thompson, J. Ridley, *The General Expression for Boundary Conditions and the Limits of Correlation*, Proc. Roy. Soc. Edin. Vol. XLIX, Part 1, No. 5, 1929; Wilson, Edwin B., *On Hierarchical Correlation Systems*, Proc. N.A.S. Vol. 14, 1928; Wright, Sewall, *Correlation and Causation*, Jour. Agric. Res., Vol. XX, No. 7, Jan. 1921.

sciences, just as, for example, physicists and chemists brought order out of apparent chaos through the periodic table of elements.

b. *Assumptions underlying the system of concepts.*
(Part IV, A, 2, b)

As long ago as 1859, Auguste Comte⁶ in his *Positive Philosophy* asserted that Newton's three laws of motion applied in the field of social phenomena. His discussion of the point was more philosophic than mathematical. He did not there carry out its implications into equations and units such as in the present proposals.

To paraphrase Newton's laws of motion in sociological terms gives :

(1) Every group continues in its present status or social process unless compelled by a force to change that status or process.

A version preferred by the writer as implying less of a metaphysical assumption and more of a simple agreement to standardize a definition is :

(1a) Whatever changes the status of a group or its process in rate or direction, is called a social force.

(2) Change of rate of a social process is proportional to the social force and takes place along the line of the scale in which the force is measured.

(3) Forces and their total resistances are equal and opposite.

These principles in social terms are not seen as postulates about the ultimate metaphysical nature of society and its functioning. They are modestly viewed as simple proposals to standardize the meaning of social force and the units for measuring it. Thus the first principle merely proposed to take the *existing* static or dynamic condition of a group in any measured respect as the zero point of a frame of reference. Then departures from this zero point may be measured and the name of force given to whatever caused them. It would be just as true perhaps to assume that every group *changes* its status

6. The *Positive Philosophy* of Auguste Comte, translated and condensed by Harriet Martineau, George Bell and Sons, London, 1896, 3 vols., p. 388 ff.

or process and that whatever stops such change or modifies it shall be dubbed a force. But here instead of one point of origin there are many—for what amount or rate of change shall be taken as the natural standard? Either the assumption of inertia as natural, or of mobility as the more natural, is possible. But the former is more logical and convenient. Therefore, inertia is conventionally assumed and departures from it (as the origin of a conventional frame of reference) are defined as forces.

The second principle defined force in equational form as an abstract mathematical entity which is directly proportional to acceleration and population, both of which are based on measured quantities. It further specifies the directional nature of forces and leads to its corollaries: the resolution of a resultant force into its component forces; and the opposite synthesis, or composition, of partial forces into one whole force effective along one line. Force thus is not a thing nor an active agent as it is in the popular view. Scientifically it is *that which* produces a measured effect. It is a pure, invented concept justified by its usefulness in dealing with phenomena. If this is understood forces may be spoken of as political forces, or economic forces, or psychological forces, etc., as convenient designations of the agencies producing forces, i.e., stimulating people to respond.

The third principle further elaborates the directional nature of forces and requires inventing forces such that the total of all the forces acting on a group at any time will be in perfect balance. This does not mean that the group is static and unchanging. If a group is changing, then the force changing it is equal to all the specific resisting forces plus an assumed force of inertia which is brought in to balance the equation.

c. *Relation of these concepts to Eubank's system of sociological concepts.*
(Part IV, A, 2, c)

Professor Eubank has recently produced a masterly analysis of the concepts of sociology and attempted a systematic organization of them.⁷

His main categories are as follows :

I. Societary composition

The single human being
The human plural

7. Eubank, Earle Edward, *The Concepts of Sociology*, D.C. Heath and Co., 1931, pp. 570.

- II. Societary causation
 - Energy (force)
 - Control
- III. Societary change
 - Action (process)
 - Relationship
- IV. Societary products
 - Culture

Without entering here into a detailed discussion, it would seem that there is much in common between the above system of concepts and the system proposed in this study. This system is not intended to cover the whole field of sociology, but only part of the quantitative, or measured, portion of the field.

Thus the quantitative aspect of Eubank's first category of societary composition is our basic unit of population, P.

The second basic unit, indicia, would comprise the quantitative aspects of his societary products (culture) and relationship in so far as this is static.

His societary change, including process and dynamic relationships, corresponds largely to the first of our compounded units, namely "change", defined as difference in statuses, and the time rates of change.

Our concept of force (preferred to energy for reasons of uniform terminology between the physical and social sciences) defines the quantitative aspect of his concept more precisely. Its directional nature together with our definition of progress largely coincides with his concept of societary control.

While a fuller discussion of these relations between conceptual systems is reserved for a later date, yet the systematic and scholarly nature of his system calls for at least a preliminary indication that a new proposed system may be harmonized with it.

B. *Application of the theory to the present experiment in hygienic forces.* (Part IV, B)

1. Unfortunately the present experiment was not planned in order to try out the theory. The theory grew out of the experiment as it was in progress. The theory requires a

minimum of three surveys on three different dates in order to get the rate of progress for two periods and to make it possible to calculate a difference, or acceleration, between the periods. But this experiment was planned with surveys at only two different dates to measure but one period of progress. This can be remedied in the future by another survey. At present the theory can be applied only approximately, as it involves an assumption. There are two alternative assumptions. Each will be followed through, however, as illustrative applications of the theory to phenomena in one restricted field in the social sciences.

The villages were surveyed in April of 1931 and again in April of 1933. The rate of change between these two dates was reported in Part III. But to get an acceleration some assumption must be made as to the rate of change before April 1931. Were conditions static or were they changing, and, if so, at what rate? The most plausible assumptions are:

a. The hygienic conditions in these villages were static immediately prior to 1931.

b. The hygienic conditions in the experimental village were changing prior to April 1931 at the rate at which they changed in the control villages from 1931 to 1933.

The first assumption, of static conditions, is preferred by those who are intimately acquainted with the local conditions. There was no evidence in 1931 of recently acquired knowledge of hygiene or of any change from the ways of their fathers. The second assumption, of rate of progress in the controls, is at first an attractive one. Unfortunately the event proved that the controls were too near the experimental sample (3 to 10 kilometers) and hygienic information from the Clinic diffused across from one village to another. Other possible explanations were discussed and eliminated (See Part III, C, 2). Consequently, the assumption of static antecedent conditions seems more plausible to the writer. As it is merely an opinion, however, each assumption will be followed to its logical conclusion.

2. *Assumption of static conditions prior to 1931.* (Part IV, B, 2)

The necessary data are given in the following table.

Table 75. Data for Calculating Social Forces.

		Control Sample	Experimental sample	Demonstration sample
a. Number of families, i.e. of scores	N =	40	40	32
b. Mean score (status) in April 1931	S _{iii} =	241	253	321
c. Gain (progress) from Apr. 1931 to Apr. 1933	C _{iv in} =	45	51	207
d. Gain in percentage of 1931 scores		18%	20%	65%
e. Standard deviation of the gain	SD _{gain} =	8.54	12.53	13.04
f. Average rate of progress per year	R =	22.5	25.5	103.5
g. Acceleration of progress	A =	22.5	25.5	103.5
h. Population in Apr. 1931	P ₁ =	155	196	132
i. " " " 1933	P ₂ =	180	204	128
j. Average population in the period	P =	167.5	200	130
k. Stims of force generated (Stim = one person stimu- lated to change one unit of hygienic score per year per year.)	F =	3,768	5,100	13,455 ⁸

In explanation of the data in the table note that by dividing the gain, C, by the two year period the rate of progress figure, R, is secured. But this is an average rate or rate at the end of one year. Since the rate at the start was zero (by assumption), the rate at the end of April 1933 must be twice the average rate. The acceleration, A, is the difference in the rates of 1931 and 1933 divided by the two year interval. This is,

$$\frac{R_{1933} - R_{1931}}{2} = \frac{45 - 0}{2} = 22.5, \text{ in the case of the control sample,}$$

for example. As the dates when individuals in the population came or left are unknown, an average population, P, during the period is calculated. The product of this population figure and the acceleration is the social force that has been generated.⁹

8. As even with small populations, such as these, the number of stims is large, it may be more convenient to deal with kilostims or larger units. 1 kilostim = 1000 stims.
9. In case one calculates the stims by the longer basic formula, it should be noted that iv = 1933, iii = 1931 = ii = i as, by assumption of the static conditions,

The force was 3,768 stims for the control sample, 5,100 stims for the experimental and 13,455 stims for the demonstration sample. These stims are the total effective force, i.e. the total of forces generated by the Clinic, the climate, and/or other agencies over and above whatever force was neutralized in overcoming the resisting forces that may have been operating.

It is interesting to note that the ratio of hygienic forces in the experimental sample to the demonstration sample is 1:2.6 while the ratio¹⁰ of effort estimated to have been spent by the Clinic agency in generating this force is 1:4. This suggests greater resisting force in the demonstration village or greater receptivity (facilitating forces) in the experimental village. From such comparisons of pairs, or groups, of samples the extent of the resisting forces, ordinarily unmeasured, may become estimable.

3. Assumption of the control sample's rate of change. (Part IV, B, 3)

The necessary data are given in Table 75 for calculating the total effective force on the assumption that the rate of change of hygienic status in the experimental village prior to April 1931 was the rate of change observed in the control villages from 1931 to 1932. The argument for this assumption is that the experimental village, prior to the Clinic starting its hygienic instruction there, was just like the controls and that whatever changes were going on there were slow, wide-spread ones due to a complex of factors at work throughout the whole country. Applying the basic formula, we have

$$F = \frac{(304 - 253 - \frac{286 - 241}{2}) 200}{(\frac{51}{2} - \frac{45}{2}) \frac{200}{2}} = 300 \text{ stims. This means that 300 stims of}$$

the scores of earlier dates would equal scores of 1931. Thus,

$$F = \frac{(304 - 253 - \frac{253 - 253}{2}) 200}{(\frac{51 - 0}{2}) \frac{200}{1}} = 5100$$
in the experimental sample.

If desired, the force may be multiplied by two for the two years it operated and the result is the number of units of impulsion towards better hygiene that the Clinic gave to these villages.

$$I = FY$$

10. See the analysis in the next section, Part IV, C, Agencies.
11. Note that the assumption means that the period 1931-33 in the control sample is substituted for the period 1929-31 in the experimental village's history.

hygienic force were generated during the period 1930 to 1932 (i.e. between mid-points of the two periods in which the *average rates of progress* are given).

These 300 stims of force are also the amount unquestionably produced by the Clinic in the experimental sample even if the amount observed in the controls was produced by other agencies. It is thus that part of the total of 5,100 stims generated by all agencies in the experimental sample, which is demonstrably due to the Clinic.

Unfortunately the reliability of these 300 stims is probably small. Although no established probable error formulae for stims exist, yet this amount of 300 is inferred to be not significant. The inference is made a) partly on the finding that the 6 points of gain in the score of the experimental sample in excess of the gain in the controls, was statistically non-significant (difference of 6 = .4 times its SD of 15), and b) partly on the significance ratio of the same amount (.4) given by a tentatively derived formula for the probable error of stims.

The conclusions from this approximate application of the theory to the hygienic data are :

- 1) 13,455 stims of hygienic force had been generated in the demonstration sample, in unknown shares, by the Clinic and other agencies.
- 2) 3,768 stims and 5,100 stims had been generated in the control and the experimental villages respectively, probably by the Clinic. In terms of stims of force the experimental sample showed appreciable superiority over the control sample, whereas in terms of average scores, they seemed to have progressed about equally.
- 3) 300 stims in the experimental sample were proven to be due to the Clinic, but this small amount is statistically unreliable as it may be attributed to sampling fluctuations.¹²

12. Until a new concept such as "stims" has been encountered in different settings, giving the reader comparative data and associations, it may be expected to have little "meaning" to him. It will acquire richness of meaning, when, and if, it proves a useful intellectual tool in studying and measuring social forces. A new concept must spread, or be forgotten, according to its utility in a field of thought.

C. Agencies generating forces.¹³

(Part IV, C)

After this exposition of social forces, there remains the question of the agencies, or social engines, which generated these forces.¹³

A social agency is here conceived of as any person, or organization of personnel, or any physical condition in nature, which changes the status of a group. It is a human and /or material unit which stimulates a group so that it responds and thereby undergoes a social process. It is the social "engine" that generates a social force and moves society.¹⁴

To describe the human agency of this experiment requires an exposition of its structure and of its functioning. Its structure includes its *personnel* and its material *equipment* of plant, literature, money, etc. Its functioning includes its *purposes*, its general *policies* for realizing these purposes, and its *programs* or more detailed steps to carry out those policies.

13. For a review of some other health agencies which are being tried out in the rural Near East, see Dodd, S.C., *Social Relationships in the Near East*, American Press, Beirut, Syria, 1931, pp. 575-84.

14. The agency is a tangible, material or human stimulator. The force it generates by stimulating people is defined in terms of resulting behavior or changes in the responders. It is convenient to think of a social force in psychological terms of stimuli, motives, conditioning of past experience, etc., but these are not its definition. These are hypotheses as to the psychological mechanism connecting the stimulators (agency) and the measured responses (indicia). Such hypotheses are invaluable—provided they are recognized as working hypotheses.

Thus, for example, a rural worker of the Near East Foundation (Mr. Afif Tanús) has supplied the writer with the following list of "social forces" (sic) or motivations in Arab villages :

- (1) Arab race loyalty
 - a. Rivalry with Jews (in Palestine)
 - b. Rivalry with foreigners
- (2) Village loyalty
 - a. Rivalry with other villages and the city
- (3) Family loyalty
 - a. Obedience to elders
 - b. Solidarity of the patriarchal family
- (4) Economic motives
 - a. Desire for larger income
 - b. Fear of dispossession as tenants because of debts
- (5) Health appeal
 - a. Desire to have male babies live
 - b. Desire to avoid sickness
- (6) Hospitality—duty to guests

These proved very useful in winning a village's cooperation for a survey or for hygienic projects. But until each is measured by some form of indicia they are here regarded not as social forces but as hypotheses.

1. *Itinerant clinic of the Near East Foundation.*

(Part IV, C, 1, a)

a. *Personnel.* The Clinic of the Near East Foundation was in charge of an American public-health nurse, assisted part time by a doctor, a young woman health worker, and a chauffeur-interpreter-handy-man.

The nurse was Miss Anne E. Slack, R.N. She had had many years of experience in institutional and private nursing, in Red Cross work during the war, and in service in Albania. She had been a little over a year on the field in Syria when the experiment started. Although ignorant of Arabic, Turkish, or Armenian she has had remarkable success in winning the confidence and love of the people. Her sunny nature and infectious smile, her initiative in making her way into every home to take up its baby and quiet it better than the mother could, and her unfailing devotion to their welfare impress the people in spite of language barriers.¹⁵ Although inclined to be more impulsive than systematic, she has developed, with the aid of the field directors of the Foundation, a regular program and system of records yielding both statistical and narrative reports.

The doctor for the first year was a young Armenian graduate of the Medical School of the American University of Beirut. He accompanied the ambulance several days each month, diagnosing the complaints of the patients, prescribing, and occasionally giving talks on health. Although a competent physician, his interest in the educational and preventive side of the work was not sufficient to justify the Foundation in continuing to employ him. He was replaced by the Government doctor in Masyaf, who, by arrangement with the French "mustashâr", visited Miss Slack's villages one day a month, held the clinic and gave orders which could be followed up by the nurses. He proved to be a colorless personality with little to contribute to the Clinic's aim of preventive work, beyond the bare essentials of diagnosis and prescription.

The brunt of the hygienic work fell upon Miss Slack and her two full-time assistants. The first of these was a Near East Relief orphan girl. With a primary school education and little knowledge of English and Arabic, she started in to keep house and to cook and gradually learned the technics of assisting in the

15. See Part I, A, 3, e, for further evidence of popular affection. In Jib Ramli there is now a baby boy named "Solomon Miss Slack" in her honor!

clinic. From a shy girl in her late teens, Vartui Shaghougian, developed into a competent health worker and leader of the children in recreation, cleanliness, and handwork. In Miss Slack's absence she would ride her horse across the plain, be received with honor by the sheikh of the village, spread out her kit and proceed to administer eye drops, quinine, face washings, instructions on diet, or baths to babies, following the directions of the nurse and the doctor. Her name was elided into Warda, Rose, and as Sitt Warda she became a personality, second only to Miss Slack in reputation, in the villages of the district.¹⁶

The second assistant was Minos Melkonian, an unusually capable young man, whose duties were to drive the ambulance, purchase supplies, improvise and repair equipment, translate into or from Arabic, Turkish, Armenian, English, or French as needed, run the stereopticon and explain the slides, conduct recreation for the boys, instruct in hygiene, supervise work of constructing sanitary latrines, or well-curbing, and generally serve as go-between for all business of the clinic with the villages.¹⁷

Other persons attached to the Clinic were temporary. Occasional visitors came and sometimes gave talks. Two college girls volunteered and ran a little summer school in Moushashen in August of 1932. The survey expeditions brought additional nurses and doctors for a week or two. One or two village women came to live with the Clinic "family" for short periods to learn what they could while helping with the cooking and housework.

b. *Equipment.*

(Part IV, C, 1, b)

At first the Clinic possessed movable equipment only. Of this the largest single item was the ambulance. This carried the Clinic personnel and any patients needing transportation for hospitalization. In compact boxes and cabinets it carried complete clinical equipment and supplies of medicines, dressings, etc. It carried provisions for a week in water tanks and a veg-

16. For a peasant's interesting appraisal of her influence see Part III, A.

17. His background explains some of his keen interest in the work of the Foundation. With his little sister and his mother, he had been driven out of Turkey in the Armenian deportations during the war. After months of "trekking" they came to this Masyaf district, starving and penniless. His mother, too weak to go on, died by the roadside leaving the two children under ten to fend for themselves. Bedouins stole the sister, but Minos finally reached a village. Later he found his sister but she died before she could be rescued. He was sent to a Near East Relief orphanage and there educated.

etable tank. It carried complete kitchen equipment, cot beds, tent and everything for the Clinic personnel's use while away from their base—a rented flat in Aleppo. Footballs, stereopticon, handwork material for girls, tools for sanitation work, files of record cards of all the population served, a phonograph, and posters on hygiene,—each had a special place and could be produced on demand. For the first year Miss Slack always slept in her ambulance, until the Clinic building in Moushashen was built.

This ambulance was painted white. It became widely known as "the white automobile."¹⁸ By the end of the first year a stone clinic building, consisting of one large room about five by fifteen meters, with movable partitions and a little kitchen, was constructed.¹⁹ It served as base for the clinic personnel, for clinic sessions, for hospitalization of urgent cases, for the daily nursery school, and for miscellaneous meetings of

18. Excerpt from Miss Slack's report for August, 1931.

"The villages and Bedouins of the Hama district greet the ambulance like a long lost friend. They come out all along the route and call out 'Ta, Ta', meaning 'Come, Come', but we wave them a greeting and hurry on. The welcome to the ambulance is very cordial. But we have no permission from the government to set up clinics all along the Syrian plain, and it is hard to get these people to understand that fact."

19. Excerpt from Miss Slack's report for July, 1932.

"*Moushashen Center.* The new Center in Moushashen is in full swing. It is equipped, organized, and functioning splendidly. It will serve as the base for the whole valley. In July it has served people who came from ten other villages, besides the five villages which are under our direct supervision. Our plan is to make a District Center of it. We have been encouraging the people in the surrounding villages to come to this Center, where all possible help and care are given.

"Now a few words about the Center itself. It has a very lovely site. It is built of stone, and sufficiently large for all our activities as clinic, day nursery, class rooms, etc. It has a nice, small playground for the children of the day nursery.

"The building, according to the latest estimate, has cost a little over \$1000.00. It is a splendid piece of work of mutual cooperation. Mr. Burnier, the Commissioner for Refugees from the League of Nations, besides giving the site, contributed more than \$350.00, and supplied all the cement, iron, lime, and some lumber. He paid also the two masons who erected the building. The people of Moushashen contributed their part to almost the same amount—\$350.00—in labor. They supplied the stone, the gravel, the water and all the labor needed, free of charge. We must consider that the supply of water and gravel were hard problems, as they were found way down in the valley. The efforts of the villagers are worthy of praise. Besides, the villagers built a very nice road to the new Center, for our ambulance. The Near East Foundation contributed its share to an amount of \$350.00 for the completion of the building. We paid for the doors, wooden frames with iron bars, glass windows, wire screening, and painting. The filling and levelling of the playground were undertaken by us. This meant blasting rocks, terracing the rugged incline, thus making a small playground on a mountain side. We also built the small kitchen and plan to build a water closet and bath room. Further developments are possible, and we can make them as our activities make them necessary.

mothers' and hygiene classes. A room in Jib Ramli was loaned by one of the cleanest families and was fixed up for a clinic center.²⁰

The Clinic was well supplied with equipment for first aid treatment, for emergency deliveries, and for demonstrating cleanliness. It was kept stocked with medicines for the usual run of village needs, such as castor oil, quinine, silver nitrate, antiseptics, etc. Although it was supplied with many slides for the stereopticon, with health posters, and with a few books, these were unfortunately not adapted to the local culture. They were all in English with pictures of American children cleaning their teeth before an enamel basin with running water, or drinking milk from glass tumblers filled from a bottle. Such pictures are readily interpreted by urchins in New York but were meaningless here, where no one has seen a milk bottle, enamel basin, or water faucet. An urgent need for effective visual education in health in the Near East is for pictures which use local costumes and settings, with Arabic captions to convey their message.

c. Budget.

(Part IV, C, 1, c)

The clinic operated in two circuits of villages, one in the Rihanie district of north Syria, between Antioch and Aleppo, and the other in the Masyaf district of central Syria, in the Alaouite state. This experiment is concerned only with the latter and only with a part of the Masyaf circuit. Consequently in order to determine the expenditure which produced the results measured in this scale, it is necessary to prorate the current expenses and overhead which were the share of Jib Ramli and the share of Moushashen—both in the Masyaf circuit. The other villages in the circuit were Sluki and later, Jlaymi, Krayat, and Sarmiah.

"So Moushashen Center is a tripartite achievement, and will serve even those who had no share in the building. I want to emphasize here for the sake of justice, that the Armenians of Moushashen contributed their full share in the completion of this building, in spite of the fact that they knew it was going to be a Center for all the surrounding Arab villages. There was a splendid spirit of cooperation manifested, with tangible results."

20. Miss Slack writes in a report: "In Jib Ramli Mrs. Helime Assuad gave one of her rooms to us for our work. We made this room over, plastered the walls, laid a cement floor, and opened two windows with frames and glass panes. The windows are the first of their kind in the village—the rest of the houses have either no windows or small holes in the wall. Mrs. Assuad feels proud that we honor her house with our presence. She is one of the women of the village most sympathetic towards our work. She has shown a great deal of progress; she is clean and keeps her three little children very well. She shows marked evidences of our influence and efforts in that village. In other villages we are still using the headmen's houses for our clinics."

A study was made during personal visits and from the monthly narrative and statistical reports of the Clinic to determine the relative share of the Masyaf circuit as to the number of cases treated, treatments, days spent, resident assistants, and activities such as lectures, classes, etc. From this study the conclusion was reached, that, on the average, one third of the time and energies of the Clinic was invested in the Masyaf district during the two year period, in which the emphasis shifted from the northern to the southern circuit. One third of the total budget of \$7,500 a year is equivalent to five thousand dollars for the two years.

A subdivision was made between the cost of work in Moushashen, the demonstration village, and in Jib Ramli, the experimental village, and in the other villages of the Masyaf circuit. The subjoined table gives some of the indices of relative expenditure of time and effort. From this a summarizing ratio of 4:1:1 was decided upon.

Table 76. Relative Time and Effort Spent by the Clinic

	Cases treated in 1931 ²¹	Treatments in 1931	Milk and extra food for children	Hygiene classes and clubs	Home visits	Health talks, stereopticon, etc.	Average number working hours spent in village per week	Command of the local language by personnel
Moushashen—demonstration	1,952	7,681						4/5 Armenian & Turkish
Jib Ramli—experimental	849	4,251						1/5 Arabic
Percentage of the sum that Moushashen received	70%	64%	90% ±	80% ±	60% ±	75% ±	90% ±	80% ±
Modified by 1933 data	75%	70%						

21. The data for 1932 were not separately reported in the monthly statistical summaries, but examination of the books and individual record cards, where every patient and every treatment is recorded, shows that the Moushashen center served an even larger percentage of the cases in 1932 than it had in 1931, while Jib Ramli's percentage sank by more than a like amount. The villages which were added to the circuit accounted for the difference.

A weighted average is 80% Moushashen and 20% Jib Ramli, which fixes the ratio between these two as 4:1.

Moushashen, getting four sixths of the time and effort spent in the Masyaf circuit, cost \$3,333, while Jib Ramli, getting one sixth, cost \$833. In Moushashen, with an average population of 130 throughout the period, the annual per capita cost of the health work was \$12.84. In Jib Ramli, with a population of 200, it amounted to only \$2.08.

d. *Purposes of the Near East Foundation and the Clinic.* (Part IV, C, 1, d)

The fundamental and ultimate purpose of the Near East Foundation is to promote in the Near East the four ideals of

Health—including physical, mental, and social hygiene
Wealth—or effective utilization of the material environment

Home welfare—raising the status of women and children

Re-creation—recreation, enrichment of life, and inspiration to desire progress

A fuller elaboration of this purpose is to be found in "Essentials of Civilization" by Thomas Jesse Jones, a director of the Near East Foundation (Henry Holt, N.Y. 1929).

The "healthmobile" clinic of Miss Slack was aimed primarily to contribute to the first purpose—health—with some contribution to the home welfare, re-creation and wealth objectives (in the order named). The Foundation believes that an integrated or four fold program is essential for social progress, so that any segmental program, such as that of this Clinic, is intended to expand as rapidly as its success and the available resources warrant.

e. *Policies of the Clinic.* (Part IV, C, 1, e)

To realize the above purposes the Foundation and its Clinic have developed certain guiding policies, among which the following may be noted.

(1) *The health work should be primarily preventive and educational with as little as possible of the purely curative and relief features.* At first the curative work necessarily, dominated, as patients needed treatment and contacts had to be cultivated. Also, in the Armenian refugee village the settlers were being loaned money to get started and were so heavily in

debt that it was difficult for them to pay for medicine and soap. But gradually the preventive part of the work was built up. The children became habituated to taking quinine till malaria was brought under control.²² The people were made to understand that the Clinic came, whether there was a patient at the moment or not,²³ and that the doctor made physical examinations of every one and kept the data on individual cards for follow-up purposes.²⁴

(2) *Only work which is locally desired and holds a prospect of being locally supported should be undertaken.* There is no imposing of welfare work, or dogmas that are not desired by the people. Unless the people want the proposed social changes to take place, they will not be considered "progress". After demonstration, if the desire does not bear fruit in economic support within their means, the project is discontinued as unsuccessful. The Clinic was built with the Near East Foundation, the Refugee Commission of the League of Nations, and the refugees, each meeting one third of the cost. Local girls are being trained to carry on the clinic work without an expensive, medically-trained personnel which the rural income could never support. Already after three years, the Clinic is withdrawing from its northern circuit, as its job of demonstrating and starting health work there is nearing completion.

22. Item from Miss Slack's report of April, 1931. "While Dr. Dodd's party was at Moushashen many who spoke the language asked of the wee tots who climbed the hill every day, 'What is your errand, little one?' 'To see Oriort Vartui and to drink the bitter water.' 'Do you like it?' 'No, but we get a red sugar with it and we like that.'"

23. Item from report of April, 1931. "Vartui reports from Moushashen that Sheikh Ibrahim of Jib Ramli neglects to send for her three times a week. She has been brave enough to go on foot, but this is too much to ask of her. On questioning Sheikh Ibrahim about this neglect, he said that as no one was ill he did not think it was necessary to send for the nurse. The doctor finally persuaded him to please Sitt Misslack by sending for Vartui, and gave him a talk about precautionary measures."

24. As an example of the method of handling the cases needing relief which inevitably arise, the following may be quoted from Miss Slack's report of June, 1932.

"Two widows helped. We have no relief funds and are not doing any relief work. Our work is health. We are glad that relief work does not enter into our program. However, sometimes there are cases which need immediate attention. During the year we had two such cases. Two men died, one leaving a wife and two small children, and the other a wife and three small children, without any support. Their condition was pathetic. So I took the cases up and presented them with all their pathos to the head of a foreign charitable organization for Armenians in Aleppo. Now these two widows have a regular monthly subsidy from this organization and are getting along. We report this matter, because it has given us a great deal of satisfaction and joy, and in the meantime saved the village from an increase of poverty."

(3) A third policy is to *work in close and active co-operation with the government.* The attempt is made to undertake only those projects which the government wants, in which it will share, and which give promise of being completely taken over by the government if the demonstration is successful. As an example of this policy Miss Slack reported (June, 1932), that she paid a special visit to the French military governor of the district of Masyaf, and found him much interested in her work. He arranged that she should use, free of charge, the government physician of the district for her program.

(4) A fourth policy is that *projects should be planned as demonstrations.* This implies an element of experimentation and of trial of a new social technic. It is felt that such risk-taking is the function of private philanthropy and that the government with tax payers' funds should only engage in those civic services which are proven desirable in the local situation. The demonstration idea also implies a short term. All projects are for a limited and stated period. No fixed investments are required, but only current expenses of salaries, rents, minor equipment, etc. This prevents projects from institutionalizing and possibly outliving their usefulness. It motivates the personnel to make a success before the date of reappointments and reappropriations. Miss Slack came on a three year appropriation and was reappointed in the spring of 1933 for two more years.

(5) A corollary of the above policies is that *local personnel must be trained to continue the work.* Some of the assistants to Miss Slack have been described. She had two more young women assistants in her northern circuit. In addition, higher grade workers, some with college education and others with nurses' training, are being enlisted and also lower grade workers from among the illiterate village women. Two college volunteers worked during the summer of 1932 and in 1933 six college girls and four nurses conducted hygiene schools and clinics and home visitation in these villages. The training of village women encounters more difficulties. So far it has been possible to select one only, to use her house as a base, and to let her assist wherever possible.

(6) A final policy was to *avoid all religious propaganda.* Sectarian differences are bitter in this land. They go so deep that villages are segregated by religion, members of elective bodies are chosen in proportion to the size of religious groups,

and religious massacres are within the memory of the people. "Christian" means chiefly a semi-national division, "Moslem" another, "Alaouite" a third, etc. Any philanthropic work is suspected as being undercover proselytizing. The Clinic has slowly convinced people that it is here only to promote health and, while respecting all formal religions, seeks to propagate none.²⁵

f. *Program of the Clinic.* (Part IV, C, 1, f)

Miss Slack's program comprised:

Clinics held by the doctor once a month
Follow-up clinics held by the nurse once a week or oftener
Home treatments of sick people
Monthly home visits for instruction and inspection
A nursery school, free for all children
Clubs and weekly classes for mothers
Clubs and weekly classes for girls
Public lantern-slide lectures.
Demonstrations—such as washing the eyes of one whole village at the spring to emphasize eye hygiene, installing model latrines, planting eucalyptus trees to drain marshy tracts, the sanitation projects of improving the well or spring, draining small local mosquito-breeding areas, etc.

The reader has now been given a brief picture of the Clinic as an agency for the creation of hygienic forces. The personnel of the Clinic, its equipment and budget, the purposes and policies of the Foundation behind it, and its program have been described.

To describe such a human agency exclusively in objective language and statistics takes away much of its meaning. On the other hand, to paint glowing word-pictures does not promote scientific aims with their ever-present requirement that a descrip-

25. A request for service in one sect was met by Miss Slack as follows:
"Trachoma. Apropos of this I shall tell a little story that amused me. Some time ago the Gregorian Bishop asked me to his office for a conference. After the salutations were over the business revealed a demand to substitute a village priest who had a family of nine to support, for the village nurse, who seemed an unnecessary luxury. After I had enumerated the duties of the nurse and her daily round of bathing babies and teaching health, this very appreciative Bishop threw up his hands and gave up his request. The priest in the story went to the village once with us, and sat under an umbrella on the terrace watching Minas and me and some of the schoolboys dig up the garden. I have promised to cooperate any time the Bishop asks me to, in transporting the priest to the village. This pleased him very much." (Report of April, 1931).



The only "medical" help in the past has been the medicines sold by the village peddler. He also obligingly vends blue beads, wolves' teeth, and other charms. Whether quinine or a tooth is more highly recommended for malaria depends on his shrewd judgment as to which remedy the customer has most faith in. But if supplied with proper medicines and first aid knowledge, the peddler might be made an effective, self-supporting, and health-promoting agent.



The travelling clinic of the Near East Foundation is exploring ways of solving the rural health problem on a basis that can eventually be supported by the local rural income. The automobile has made possible the serving of a large population and the reducing of the per capita cost of hygienic instruction and demonstration. But it is still beyond the rural income to support. Training local village lieutenants is being explored as a means to supplying health service which the peasantry can afford.

tion be so precise as to enable another investigator to duplicate the phenomena described. Fuller statistics analysing the activities of the Clinic are to be found in the appendices. Fuller excerpts from narrative reports, giving insight into the work of the Clinic are also to be found in the appendices. A concluding comment of a subjective character by the writer, may not be amiss.

g. *An appraisal.*

(Part IV, C, 1, g)

The outstanding features of the Clinic, in the writer's judgment, were the energy, devotion, and many new ideas of its personnel. The records kept were good though not always kept up to date.²⁶ The Clinic lacked materials for visual education adapted to local needs. Since the personnel did not have full command of the vernaculars, it was inevitable that curative medicine should be emphasized more than preventive. Much time and energy were lost on travel, by having two widely separated circuits. The problem of a rural health service cannot be solved by such a clinic, because it is too expensive for the locality to support. But such a clinic may go far toward solving the problem if it can be developed to a greater extent as a training center for village women and as a place where native supervisors can be educated.

2. *Other possible agencies and forces.* (Part IV, C, 2)

Although the Clinic was the chief agency generating hygienic forces, yet all the minor agencies and forces had to be appraised also. A study of the local situation indicated the government doctor at Masyaf as the other most probable source of hygienic stimulation, if there were any at all. He was a Syrian with a mediocre medical training. He was on salary, giving full time to the clinic in the government building, except for six days each month, during which he toured among the villages of the district, holding clinics in them. These clinics were for curative purposes exclusively. While on these tours the time of the doctor was occupied with attending to cases of accident or disease, and operations. Chronic cases of eye-trouble, malaria, and intestinal parasites were given little attention as the doctor did not have the necessary medicines nor did he have the time to follow through any course of treatment

26. The records comprised cards for every individual with his medical examinations and treatments, a journal of all daily treatments classified by kind and by recipient, a diary, monthly narrative and statistical reports and accounts.

effectively. No education of the villagers, nor any improvement of village sanitation, was carried out. The doctor visited each village several times a year and saw whatever cases were brought to him. Very few villagers knew of his existence and fewer still had ever consulted him. Two or three individuals were discovered who had learned something about malaria from him, but these were distributed in different villages. The doctor was a functionary, of a mild and retiring personality, with no concept of public health work. In sum, his influence towards changing the hygiene of these villages during the period of the experiment was considered negligible.²⁷

There were no other agencies which could be considered to have been reasonably disturbing to the experiment. There were no school teachers, other than a few teachers of the Koran. No missionaries worked in these villages during this period. No newspapers, nor literature other than a few copies of the sacred books, were found anywhere, nor was any imparting of hygienic information by landlords or chauffeurs, revealed by investigation. The occasional contacts of the few peasants, who made an annual trip to Hama to sell their crops, gave no evidence of having yielded hygienic information. Furthermore, the experimental and the control samples were equally exposed to whatever random information may have seeped in through such channels as the above.

Hygiene was defined not only as knowledge as to how to preserve health, but also as practices and conditions conducive to it. Even though no sources of hygienic information disturbing to the experiment were revealed, yet such factors as rainfall, crops and other causes changing economic income, might change practices, such as the purchasing of quinine from the peddler, or conditions, such as the extent of the swampy area, or the malnutrition of the children.

Economic income during the two-year period was distinctly shrinking throughout the area. The prices of agricultural products were decreasing from 1931 to 1933. The rainfall was unusually small. Conclusive evidence of decreased income exists in the fact that the government was forced to grant general rebates in the tithe. In so far, then, as hygiene is an

27. Three years prior to the experiment, however, during the smallpox epidemic, a government doctor had come and vaccinated most of the villagers. As the percentage actually vaccinated was about the same in both the experimental and the control samples, this should be considered as a constant factor, as far as the experiment is concerned.

effect of wealth (in the interaction of the two), the decrease of the wealth factor would tend to lower the hygienic status. Furthermore, whatever effects these economic factors, of rainfall, crop production and prices, road improvement, and tax rebates may have had, they operated equally on experimental and control samples.

The marshy area and malaria, were also equated, in that the great marshes of the Orontes were equidistant from both samples. A small marsh north of Jib Ramli dries up early in May before the malaria season.

The isolation of these villages was so complete as to achieve the practical elimination of all causes of improved hygiene other than the Clinic. These particular villages were chosen because scientific methods demanded the isolation of the one cause under study, while its effects were being observed and measured.

The Clinic then emerges from this analysis as the chief, if not the only, agency which generated the hygienic forces, measured in "stim" units, and which caused a progress of 20% to 65% in the hygienic status of the Syrian villages in this study.

(For fuller conclusions regarding the whole study see the Abstracts for Part I-IV).

APPENDICES

APPENDICES

APPENDIX I

Exhibit of Form A Schedule Card
and Instructions to Surveyor

Key for Form A and Form B question numbers

The eight pages of the schedule, Form A, which are exhibited on the following eight pages were printed on the two sides of a sheet 17 cm high and 37 cm long. This was folded three times so as to fit into a "Lefax" notebook and be kept inconspicuously in the surveyor's pocket. It could be opened to fill in any page while held in place in the notebook by the usual rings for holding loose leaf sheets.

1

Village¹ _____ Family³ _____
 Region² _____ Religion⁴ _____

FAMILY HYGIENE SCHEDULE

(FOR SYRIAN VILLAGES)

1st Visit Surveyor⁵ _____ Temp⁸ _____ Hour⁸ _____ Day _____ Mon _____ 193
 2nd Visit Surveyor⁶ _____ Temp⁹ _____ Hour¹⁰ _____ Day _____ Mon _____ 193
 1st Informant¹¹ _____ 2nd Informant¹² _____

NAME ¹³	Male ¹⁴	Age ¹⁵	Relation ¹⁶	Occupation ¹⁷	PS ¹⁸ Daily	Key to Relations
1						A = head
2						B = wife
3						C = daughter
4						D = son
5						E = mother
6						F = father
7						G = brother
8						H = sister
9						I = grand-child
10						J = step.
11						L = in. law
12						K = servant

BIRTHS Wife¹⁹ Live _____ Still _____ Miscar.²⁰ rriage _____ Abort _____ Yrs²¹ to last birth _____
 Wife²⁰ " _____ " _____ " _____ " _____ 22.

MARRIAGE AGES Head²³ _____ Wife²⁴ _____ Wife²⁵ _____ Wife²⁶ _____ Wives²⁷ divorced _____

DEATHS in last two years Record name, age at death & date above _____
 Cause²⁸ _____
 Doctor³⁰ _____

NOTES²⁹ _____ a
 _____ b
 _____ c
 _____ d
 _____ e
 _____ f

[illegible][illegible]

SEX		Reproduction ⁸⁸ Knowledge from		Male Habits ⁹¹		D ₂		W		M		1 or 2		N	
1 st Menstruation ⁸⁹		Animal example		Married ⁹⁰											
Soak feet		Human example		Single											
Bed		Comfortable		Natural ⁹¹											
Charm		Family talk		Masturbation											
Aspirin		Parents instruct		Sodomy											
Other		Book instruct		Animals											
Nothing		Other		Prostitutes											
Prostitutes ⁹³		In village		Kilometers		Fee ⁹⁴		Rates ⁹⁵		Group ⁹⁶					
Prophylaxis & Contraception		Contraception desired		Husband		Wife									
Passary ⁸⁸		Soap		Post-menstrual week		Interruptus		Charm							
Quinine		Douche		1 st		2 nd		Condom		Other					
Vinegar		Nothing		3 rd		4 th		Washing		Nothing					
Fertility Fetishes ⁹⁹		Charms		Shrines		Prayer		Vows							
Avoid well water		Douches		Divorce		Midwife		Doctor							
NOTES ¹⁰⁰															
a															
b															
c															
d															
e															
f															
g															
h															
i															
j															
k															
l															
m															
n															
o															
p															

FOOD												Write D when dried or H when heat preserved for winter		5	
Vegetables				Fruits				Cereals				Animal ¹¹¹			
In Season				In Season				In Season				Products			
In Winter				In Winter				In Winter				Beef			
Peel & wash				Peel & wash				Peel & wash				Mutton			
Cooked				Cooked				Cooked				Pork			
Tomatoes				Olives				Whole wheat				Goat			
Cabbages				Dates				White flour				Camel			
Celery				Bananas				Rye				Liver			
Carrots				Grapes				Rice				Chicken			
Onions				Oranges				Barley				Other fowl			
Garlic				Lemons				Oats				Fish			
Leeks				Limes				Millet				Seafoods			
Peppers				Figs				Maize				Eggs			
Achres				Mulberries				Popcorn				Milk			
Egg plants				Apricots				Sesame				Eggs 112			
Squash				Acidonia				Miscelan ¹¹⁰				Milk			
Pumpkin				Plums				Coffee				raw			
Beets				Apples				Tea				boiled			
Turnips				Pears				Cocoa				Leban			
Parsnips				Peaches				Sugarcane				Cheese			
Beans				Quinces				Salt				Butter			
String				Cherries				Tobacco				Clarified			
Peas				Cactus				Poppies				Nuts, Almonds ¹⁰³			
Lentils				Pomegranates				Hemp				Walnuts			
Potatoes				Korob				Hay				Almonds			
Sweet				Watermelons				Alfalfa				Hazelnuts			
Spinach				Musk "				Cotton				Chestnuts			
Greens				Blackberries				Silkworms				Snowbirds			
Cauliflower				Straw "				Reeds				Peanuts			
Artichoke				Cucumbers				Gourds				Eggs 115			
Asparagus				Lettuce				Food kept ¹¹⁴				Copper ¹¹⁵			
				Radishes				Open to flies				Vessel			
MENU 1 st meal AM 2 nd meal M 3 rd meal PM Mother ¹¹⁹															
Pregnant															
Nursing															
Extra food															
WATER															
Meden Sum ¹²⁰				Winter ¹²¹				Lifes daily ¹²²				Boiled ¹²³			
Carried ¹²⁴				Drinking ¹²⁵				Other ¹²⁶				Meters ¹²⁷			
Sum. Wint. Sum. Wint.				Sum. Wint. Sum. Wint.				Sum. Wint. Sum. Wint.				Container ¹²⁸			
Spring				Piped				Higher				Washed ¹³⁶			
Well				Stream				Level				Earth			
Cistern				Stagnant				Lower				Earth			
KEY: Symbols (Blank): Secured															
D = daily A = annually V = Yes This is present W = Emphatic yes # = Answer in numbers															
W = weekly N = never used or done O = No This is absent. O = No															
M = monthly W = twice a week This is absent. O = No															
S = seasonally 2D = every 2 days ? = Doubtful or approximate															
OO = Emphatic no Never! This is "earth"															
136 = daily, etc.															
S.C. Dodd A.U.B. Beirut, Syria, March 1931 Trial Form A															

Appendix I.

6

INFANTS up to 2 years GENERAL

Baby A (youngest) Weight ¹³⁷ _____

Age (Months) ¹³⁸ A ¹³⁹ B Condition ¹⁴⁴ A ¹⁴⁵ B Vomits ¹⁴⁶ A ¹⁴⁷ B Movements ¹⁴⁸ A ¹⁴⁹ B

At birth ¹³⁸ Skin rash ¹⁴⁰ Bites ¹⁴¹ After feeding ¹⁴² Daily ¹⁴³ Curdy ¹⁴⁴ A ¹⁴⁵ B

Teething ¹³⁹ Eyesores ¹⁴⁰ Other times ¹⁴¹ Liquid ¹⁴² Green ¹⁴³ A ¹⁴⁴ B

Sitting ¹⁴⁰ Other ¹⁴¹ Spoonful ¹⁴² Soft ¹⁴³ Blood ¹⁴⁴ A ¹⁴⁵ B

Walking ¹⁴¹ Other ¹⁴² Spoonful ¹⁴³ Soft ¹⁴⁴ Blood ¹⁴⁵ A ¹⁴⁶ B

Talking ¹⁴² Malnutrition ¹⁴³ All feeding ¹⁴⁴ Formed ¹⁴⁵ Mucus ¹⁴⁶ A ¹⁴⁷ B

Weaning ¹⁴³ Pot Belly ¹⁴⁴ Balls ¹⁴⁵ Worms ¹⁴⁶ A ¹⁴⁷ B

FOOD

Kind ¹⁶² Enter "A" and "B" Source ¹⁶⁵ Animal milk ¹⁶⁶ Treatment ¹⁶⁷ A ¹⁶⁸ B

Daily ¹⁵⁰ Occasion ¹⁵¹ Never ¹⁵² Cooked ¹⁵³ A ¹⁵⁴ B Mother ¹⁵⁵ Scalded ¹⁵⁶ A ¹⁵⁷ B

Milk ¹⁵⁰ Wet nurse ¹⁵¹ Boiled ¹⁵² A ¹⁵³ B

Water ¹⁵¹ Cow ¹⁵² Leban ¹⁵³ water ¹⁵⁴ A ¹⁵⁵ B

Goat ¹⁵² boiled ¹⁵³ A ¹⁵⁴ B

Camel ¹⁵³ Powder ¹⁵⁴ A ¹⁵⁵ B

Other ¹⁵⁴ Tinned ¹⁵⁵ liquid ¹⁵⁶ A ¹⁵⁷ B

Butter ¹⁵⁵ Manner ¹⁵⁶ A ¹⁵⁷ B Drugs ¹⁵⁸ A ¹⁵⁹ B

Eggs ¹⁵⁶ Whencries ¹⁵⁷ Castor oil ¹⁵⁸ A ¹⁵⁹ B

Cod liver ¹⁵⁷ Reg hours ¹⁵⁸ Hindigrass ¹⁵⁹ A ¹⁶⁰ B

Oil ¹⁵⁸ Bottle ¹⁵⁹ Hashish ¹⁶⁰ A ¹⁶¹ B

Soaked ¹⁵⁹ Cap ¹⁶⁰ Opium ¹⁶¹ A ¹⁶² B

Bread ¹⁶⁰ Spoon ¹⁶¹ Degassed ¹⁶² A ¹⁶³ B

Cereals ¹⁶¹ Diet ¹⁶² Other (note) ¹⁶³ A ¹⁶⁴ B

CLEANLINESS

Washing (Baby A) ¹⁷⁴ 175 176 177 178 179 180 181 182

Diaper type ¹⁷⁴ Changed-Hours ¹⁷⁵ Diaper ¹⁷⁶ D ¹⁷⁷ 2D ¹⁷⁸ W ¹⁷⁹ 2W ¹⁸⁰ M ¹⁸¹ N ¹⁸² Water Soap Sunned

Sand ¹⁷⁴ 2 ¹⁷⁵ 4 ¹⁷⁶ 6 ¹⁷⁷ Clothes ¹⁷⁸ D ¹⁷⁹ 2D ¹⁸⁰ W ¹⁸¹ 2W ¹⁸² M ¹⁸³ N

Pot ¹⁷⁴ 8 ¹⁷⁵ 12 ¹⁷⁶ 24 ¹⁷⁷ Baby ¹⁷⁸ D ¹⁷⁹ 2D ¹⁸⁰ W ¹⁸¹ 2W ¹⁸² M ¹⁸³ N

Pipe ¹⁷⁴ 176 Bottle Nipple Immersed ¹⁷⁷ Ears ¹⁷⁸ Mouth ¹⁷⁹ Con. When = Crying: ¹⁸⁰ Sleeps Stops ¹⁸¹ Pacifiers ¹⁸² Thumb ¹⁸³ A ¹⁸⁴ B

Cloth ¹⁷⁴ Clean ¹⁷⁵ Sponged ¹⁷⁶ Nose ¹⁷⁷ Genitals ¹⁷⁸ Degassed ¹⁷⁹ A ¹⁸⁰ B

Rubber ¹⁷⁴ Boiled ¹⁷⁵ Oiled ¹⁷⁶ Eyes ¹⁷⁷ Scalp ¹⁷⁸ Nails ¹⁷⁹ Cloth looser ¹⁸⁰ A ¹⁸¹ B

HABITS

Lies ¹⁸³ Powdered ¹⁸⁴ Kohl ¹⁸⁵ Cut ¹⁸⁶ Sleeps Stops ¹⁸⁷ when Crying ¹⁸⁸ Temp. changed ¹⁸⁹ A ¹⁹⁰ B

Tied ¹⁸³ Cradle ¹⁸⁴ Rocked ¹⁸⁵ Sung to ¹⁸⁶ Insect-proofed ¹⁸⁷ A ¹⁸⁸ B

Net ¹⁸³ Bed ¹⁸⁴ Nursed ¹⁸⁵ Distracted ¹⁸⁶ Cried out ¹⁸⁷ A ¹⁸⁸ B

Outdoors ¹⁸³ Floor ¹⁸⁴ Cuddled ¹⁸⁵ changed ¹⁸⁶ Other ¹⁸⁷ A ¹⁸⁸ B

with mother ¹⁸³ Nothing done ¹⁸⁴ A ¹⁸⁵ B

Appendix I.

7

PROPERTY

House ²⁰⁰ Squat ²⁰¹ Rented ²⁰² Mortgaged ²⁰³ Owned ²⁰⁴

ROOMS

Rooms ²⁰¹ 1 2 3 4 5 6 7 8 9 10 11 Key

Use ²⁰² A = Kitchen ²⁰³ B = Bedroom ²⁰⁴ C = Living room ²⁰⁵ D = Dining " ²⁰⁶ E = Store " ²⁰⁷ F = Hall ²⁰⁸ G = W.C. ²⁰⁹ H = Stable in ²¹⁰ I = " out ²¹¹ J = " Separate ²¹² K = Basement ²¹³ L = 2nd floor ²¹⁴ M = Shed ²¹⁵ N = Coop

Floor Sq. m ²⁰³

Windows Sq. m ²⁰⁴

Screens ²⁰⁵

Glass ²⁰⁶

Shutters ²⁰⁷

Nothing ²⁰⁸

Condition P.S. ²⁰⁹

Swept ²¹⁰ D W M S A N P = Swept Q = Unwept R = Swept S = Swept T = Swept U = Swept V = Swept W = Swept X = Swept Y = Swept Z = Swept

Washed ²¹¹ D W M S A N Q = Cob webs R = Swept S = Swept T = Swept U = Swept V = Swept W = Swept X = Swept Y = Swept Z = Swept

MATERIALS

Write room number ²¹² if different

Floor ²¹³

Walls ²¹⁴

Roof ²¹⁵

YARD

(10 meter zone) ²¹⁶ Earth ²¹⁷ Faced ²¹⁸ Veget ²¹⁹ Flowers ²²⁰ Vines ²²¹ Trees ²²²

Walled ²¹⁶ Human ²¹⁷ Animal ²¹⁸ Decay ²¹⁹ Drying ²²⁰ Swept ²²¹ A ²²² B

ANIMALS

²²³ Cows ²²⁴ Oxen ²²⁵ Goats ²²⁶ Sheep ²²⁷ Hens ²²⁸ Pigs ²²⁹ Ducks ²³⁰ Mules ²³¹ Horses ²³² Falcons ²³³ Camels ²³⁴ Dogs ²³⁵ other ²³⁶ Buff ²³⁷ A ²³⁸ B

Number Owned ²²³

Killed for Food ²²⁴

Last 12 months ²²⁵

Birch ²²⁶

Last 12 months ²²⁷

Kept in room ²²⁸

In winter ²²⁹

LAND

²³⁰ Irrigated (garden) ²³¹ Unirrigated ²³² Tilled ²³³ Untilled ²³⁴ Unfillable ²³⁵

Owned = A Rented = C Area ²³⁶

Mortg = B Communal ²³⁷ Owner ²³⁸ Ship ²³⁹

NOTES

²⁴⁰ a ²⁴¹ b ²⁴² c ²⁴³ d ²⁴⁴ e ²⁴⁵ f

[illegible]

Instructions for Family Hygiene Schedule Form A

Key to
number of
this question
in Form B*

1. (General direction to surveyors omitted here.)

II. Instructions for page 1.

Section I

- | | | |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. | The name of the village and all Arabic terms should be recorded in standard transliteration to English letters. In case of doubt the Arabic or Armenian word may be written underneath the English. | 2 |
| 2. | The region means "muhafazah". | 3 |
| 3. | Enter the family's name and its number in the filing or surveying system. | 1 |
| 4. | Record religion in the following categories :—Sunni, Shi'ite, Jew, Druze, Bahai, Zoroastrian, Protestant, Greek Orthodox, Gregorian, Maronite, Greek Catholic, Copt, Syriac Orthodox, Chaldean Catholic, Syriac Catholic, Armenian Catholic, Nestorian. | |
| 5, 6. | The name of the questioner should come first, and the recorder second. | 4, 7 |
| 7, 8. | Temperature means the centigrade outdoor temperature in the shade, protected from wind, at noon. | |
| 9, 10. | Record the hours of the day in the twenty-four hour system, and the day of the month and the month of the year in numbers. Thus for April, write 4, etc. | 5, 8 |
| 11, 12. | The informant or informants may be designated by the numbers in the list of family names below. | 6, 9 |
| 13. | Be very careful to secure the complete list of names in the family and to spell them correctly. | 10 |

* Items marked with an asterisk indicate questions which are not entirely alike in Form A and Form B. Form A questions for which no Form B number is given, were omitted on revision. Nos. 21, 28, 58, 61 in Form B are not in Form A.

	Key to Form B numbers
14. Check V, meaning yes, for males and O, meaning no, for females.	11
15. Record age to the nearest year, and for children under two years to the nearest month. For ages which may be more than five years in error, add a question mark.	15
16. Relation to the head of the house, whose name should appear in row 1, should always be entered. This relationship may be designated by the key letter in the last column. Thus, stepson would be JD and mother-in-law would be EL. Second wife may be B ² and her children C ² , D ² , etc.	16
17. The man's principal occupation, as "fella", etc., should be entered opposite his name and subsidiary or occasional occupations may be entered below in spaces which are not needed for some of the children. In case the wife or other members of the family earn money, this should be recorded under occupation.	
18. If any of these persons are paid in cash, indicate how many Syrian piasters a day are earned when employed.	
19, 20. For each wife record the total number of children born; classify as living births, stillbirths, miscarriages (premature stillbirths from artificial or intentional causes).	20
21, 22. Record the number of years elapsed between the birth of the first baby and the last baby. This will make it possible to calculate the average interval between births.	
23. What was the age of the head of the household at his first wedding?	
24, 25, 26. What was the age of each wife at her first wedding?	
27. How many wives has the head of the family divorced, if any?	

	Key to Form B numbers
28. Record the number of deaths in the family in the last two years and enter each in row 12, 11, etc., drawing a heavy line between them and the living above. Indicate sex, age at death, date of death, under the column headed "Occupation".	17
29, 30. Record the cause of death as reported by the family, together with the doctor's name, and his diagnosis, if such exists and can be ascertained.	18
31. All notes should be keyed, i.e. in the section entitled "Notes", the number of the question to which the note refers should be written.	19
<i>Instructions for "Sickness and Remedies" Section. Page 2.</i>	
32. Key all notes by a letter referring to the question to which the note applies.	
33. "What sicknesses have you had in your family?"	13
34, 35. Follow up question 35 with subsidiary questions in order to find out for each individual of a family how many days, or parts of days, he has been in bed during the last month; and approximately during the last year.	12
36, 37. Record the informant's diagnosis of each sickness in general anatomical terms with perhaps a descriptive adjective, such as swollen abdomen, sore eyes, or the name of some well-known disease, such as malaria, dysentery, etc.	13
37. The doctor's diagnosis, if there has been any, should always be secured from the doctor's records, and not from hearsay evidence.	
38. "What do you do when one of your family gets sick?" If the answer is vague or reluctant, or the problem has not been actually experienced, the question can be re-phrased as, "What would you do if one	Section II in form B 22-29*

Key to
Form B
numbers

of the children got malaria, cut his hand, had a headache, etc.?" or, "What do the people in this village do for childbirth, venereal disease, measles, etc.?"

39—51. For each malady ask in detail what their customs are. Frequent encouragement must be given to draw the informant out and make the list complete by such questions as, "What else would you do, if that didn't help?" The answers should not be suggested, but should come spontaneously from the informant. In addition to checking the remedies particular to each malady, there is at the bottom of the list for each malady (after the* sign) a space in which to write the appropriate letters referring to the "general remedies" list. The questions on childbirth and venereal disease are perhaps best asked only by persons of the same sex. Especial inquiry should be made for the reliable remedies from the general list that apply to the particular disease. Thus, for smallpox and for typhoid, ask about T (vaccination and inoculation), for measles, U (isolation), for cuts and childbirth, S (disinfectant), etc.

43. Infusion of some herb boiled in water should have a note as to its ingredients.

46. A vegetable compress means an onion or potato tied over the forehead, while cold water means bathing the head with cold water.

50. The questions refer mostly to the practice of the midwife. 50c means, does she await the afterbirth to come out of itself, or does she insert her hands to draw it out? 50h, "Cord in earth," refers to a common practice of rubbing the cut end of the umbilical cord with earth. 50i, "Cord sterile," means do they apply any anti-

Form A no. Form B no.

39=29

40=27*

41=25*

42=24*

26*

45=22*

48=23

Key to
Form B
numbers

septic dressing, dip the cord in arak, or do anything of a like nature? 50j, "Lemon drops," means lemon juice in the eyes.

51. "Avoids contact," means does the person with active venereal disease avoid using the same dishes, towels, etc., in order not to communicate the disease to others in the family?

Instructions for "Cleanliness" Section. Page 3.

53. "How often do you wash your underclothes?" Daily, weekly, fortnightly, monthly, seasonally, annually, never? Check with the "yes" sign, placing it above or just after the appropriate symbol, or correct the symbol if necessary. Thus, for twice a week, check after the W with a 2 below it.

54. 53 shows the frequency of laundry during the winter, and 54 during the summer.

55. "How often do you wash your outer clothes?"

57. "With what do you wash your clothes? In cold water in the house, at the stream or village water-hole, in hot water, with ashes in water, or with soap?"

58. "Do you beat your clothes in washing them? Do you iron any of them? Do you ever brush them? Why?" This is a "slantwise" question to get at the presence of lice, fleas, etc. "Do you ever hang your clothes, such as coats and things which have not just been washed, out to sun?" The surveyor should note whether the informant's clothes are reasonably clean or obviously dirty.

59. "With what do you clean your teeth?" "Stick" refers to the common practice of splitting the end of a twig to make a sort of brush of it.

Appendix I.

Key to
Form B
numbers

60. How is the nose blown? With the fingers? wiped on sleeve or dress? or with a handkerchief?
61. Do all the members of the family use a common towel for wiping the hands? or do they have individual towels? If neither, what do they use? It is better for the surveyor to ask to see the towel than simply to ask for a statement of their practices. 26* 28*
62. "How much soap do you use in a month?" Ask to see the cake and measure its size on the scale on page 1 where the horizontal lines are $\frac{1}{2}$ cm apart. Then calculate the number of liters used annually. 48
- 63, 64. "At meals do you have one spoon and one dish for all of you, or does each person have his own?"
65. A "breek" which does not touch the lips should class as an individual cup, while one which touches the lips of all the family should class as a family drinking vessel.
66. "Do you eat your meals at a table? Do you place the food on a tray, or do you put the food on the floor and squat down beside it?"
67. "Before milking the cow or goat, do you wash your hands? Do you wash the udders of the animal? Do you wash out the pail?"
- 71—87. Answers to these questions may be indicated at the left, for the family as a whole. In case there is no high correlation between the practice of the members of the family, they may be answered for individuals in the appropriate row following the numbering of the rows as on page one, where row 1 should be the head of the family, row 2 should be his wife, row 3 should start with the eldest child, and

Appendix I.

Key to
Form B
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- the rows after those for the children should show other relatives. It is always desirable to record the information in the row for the informant, as well as for the family in general.
71. "How often do you change your underclothes?" Questions like this should be answered not in general but for the current season when the survey is made.
 72. "How often do you take a cold bath?" Note whether in a stream, outdoors, or indoors. Usually cold baths will be taken by the children only if some stream is available.
 73. "How often do you take a hot bath?"
 74. "How often do you wash your face and eyes?" Wherever questions such as this produce vague answers, pin them down to what they did in the last 24 hours as a sample of their usual practice.
 75. "How many times a day do you wash your hands?"
 76. "Do you wash your hands regularly before meals?" Check "yes" if regularly, check "yes" and "no" if occasionally, and "no" if it is not usually done.
 77. How often do the men shave their faces?
 78. "Do you shave the genitalia?" This question should be put with discretion by people of the same sex where there is sufficient privacy and contact to make the surveyor feel that a personal question will be willingly answered.
 79. "How often do you clean your teeth? Three times a day? twice a day? daily? every two days? etc."
 80. "How often do you have a movement of the bowels? In the last twenty-four hours?"

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81. What is used for cleansing purposes?
82. Is it a regular practice to wash the hands afterwards? Check "yes" if regular, "yes" and "no" if occasional.
83. "How many layers of clothing or cloth are you wearing over your abdomen at present?"
84. Who in the family smokes? Nargileh or cigarettes? How much time or how many cigarettes a day?
85. Does any member of the family drink arak, cognac, or other strong liquor? How frequently?
86. What is the average number of cubic centimeters each time? This can be asked in terms of glasses or bottles which the surveyor must see and estimate in terms of cubic centimeters.
87. "Does anyone in this household take drugs? How often?" Note the kind of drug, if any.

Instructions for "Sex Hygiene" Section. Page 4.

88. What remedies do they use at a girl's first menstruation to prevent pain?
89. How do the children secure their knowledge of the physiology of reproduction? Questions like these cannot be put directly but must be drawn out from a conversation. This one, for example, might result from a question about how the children learn what marriage means, and how to live with a husband or wife.
90. How many married adult males and how many single males above adolescence are there in the family?
91. This question can be asked only occasionally, and then preferably by a doctor in a confidential conversation. Sometimes information may be offered spontaneously

66i

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- by neighbors. It should not be asked unless the surveyor is sure of his contact, as otherwise it may stir up much resentment. 91a, natural, means nocturnal emissions; 91b means any form of masturbation; 91c means visiting a prostitute, or any form of adultery.
92. This offers opportunity to record the frequency of such intercourse in the rare cases where such information is available.
 93. How many prostitutes, if any, are alleged to exist in the vicinity? Are they in the village? If they are in a neighboring village or town, how many kilometers distant is it?
 94. Is it commercialized prostitution, in which a fee is charged? What is the fee?
 95. Are they registered or licensed prostitutes?
 96. To what group do they belong? Religion, nationality, etc.?
 97. Is contraception desired by the husband? Is it desired by the wife?
 98. What form of prophylaxis and contraceptive is used by the women? If they depend upon the "safe period," when do they think that period is? During the first, second, third, or fourth week after menstruation? The balance of this question refers to the methods of prophylaxis and contraception practised by the male. Does he use coitus interruptus? a condom or sheath? wash the genitalia after intercourse? use a charm? some other method? nothing?
 99. Fertility Fetishes. In case of sterility, what do they believe will overcome it? Any practices or beliefs in connection with sterility should be noted.

Instructions for "Food" Section. Page 5.

100. Which of the following vegetables do they have in season? This means whether the family has raised, or at any time during the past year eaten the vegetable.
102. Which vegetables do they have in winter? In case some of the vegetables are dried or preserved by some heating process for the winter, the letter D or H should be substituted for the check mark used in column 102. 42
103. If the vegetable is eaten raw, is it peeled or washed before using? 43
104. Which vegetables are cooked? Many vegetables may sometimes be eaten raw, in which case column 104 should be checked "yes" and "no."
- 105, 108. This is a similar set of questions for the fruits in the region and for a few more vegetables which are usually eaten raw as fruit. 42
43
109. "What cereals do you raise or have you eaten during the last year?" Make a distinction between whole wheat flour and white flour.
110. "Which of the following do you use?" Poppies and hemp are included in the list because they contain opium and hasheesh. Hay and alfalfa are cattle crops. To make the list of crops complete, cotton, silkworms, reeds for matting, and gourds, are included, although they have very little relation to hygiene.
111. Which of the following animal products have they eaten in the course of the last year?
112. How do they eat milk or milk products? boiled? made into cheese or butter ("zibdi")? or clarified butter ("samni"), which is boiled again and has most of the vitamins destroyed? 41

113. "What nuts do you grow or have eaten during the last year?"
114. "Where do you keep your food between meals?" The surveyor should note whether the food is open to flies, kept covered by a cloth, or in a screened or wooden closet, etc. 57
115. The surveyor should note if the copper vessels are well tinned with a silvery finish, or if this has worn through, exposing the copper. If the copper is exposed and acid food put into it, there is danger of copper poisoning. Check "yes" if the copper is exposed, "no" if the vessel is properly tinned.
116. "When did you eat your first meal today? What did you have to eat?" 40*
117. "When did you eat your second meal today (or yesterday)? What did you have to eat? Anything else?" 40*
118. "When did you eat your third meal yesterday? What did you have to eat?" Or, "What will you eat tonight for supper?" 40*
119. "Is there an expectant mother or a nursing mother in the family, and does she eat any extra food? If so, what?"

Instructions for "Water" Section. Page 5 con.

120. "From where do you get your water in summer time?" The surveyor should pace off the distance, and record the number of meters from the house. 45
121. "Do you get your water from the same place in winter?" If it is from a different place, record the distance.
122. "How much water do you carry each day?" Consider an oil tin as fifteen liters, as it cannot be carried brimfull. 44

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	Key to Form B numbers
123, 124. In case the water is from some very bad source, is it either boiled, or filtered through an earthenware pot into a container?	47
125-127. "What is the source of your drinking water in summer time?"	45
128. "In winter time?"	
129. What is the source of water, used for other than drinking, in summer? in winter? If the same source is used for both seasons, check between the two, and if the same source is used for drinking and other purposes, check in the middle of the four columns.	
132. If the source of water is within 100 meters of a W.C. or source of contamination, note the distance.	46*
133. Note the slope of the intermediate ground. Is the W.C. higher than the water source? on a level? lower?	46
134. Note the character of the intermediate ground. Is it solid rock? mixed stone and soil? soil only?	46
135. Is the container, in which the water is kept in the house, open to insects and dust? If it is partially closed, as in a jug with only a small open neck, check "yes" and "no."	
136. Is the water container washed? How often? Check by using the appropriate symbol or enter some other more precise symbol in the fourth blank space.	

KEY TO SYMBOLS

The symbols D, W, S, A, N, stand for daily, weekly, monthly, seasonally, annually, never, respectively. The check mark "yes" should be made over, or preferably just after, the symbol which is closest to the answer. If desired, intermediate periods can be indicated as follows: For fractions, draw a line under the symbol and place a number as a denominator.

Appendix I.

Thus, W would mean twice a week, D would mean three times a day. For multiples of a period, write a number before the symbol. Thus $\frac{2}{D}$ would mean every two days, etc.

Where the space for checking is left blank, it means that no data was secured, i.e., either the question was not asked or no information was forthcoming.

V means "yes". This is a standard symbol for checking in the affirmative throughout the entire schedule. It means that the item checked is present, or that the article in question is used, or that the action indicated is practised.

O is the standard symbol throughout this schedule card for checking in the negative. Its meaning is "no", this item is absent or not used, or this action is not practised, etc. Where answers are to be given in numerical terms, zero is again the negative answer, as the quantity in question exists in zero amount, i.e., not at all.

A question mark in a space to be checked or after a symbol or number, indicates doubtful or approximate data.

For some items an answer in five degrees from extreme affirmative to extreme negative may be indicated by doubling the "yes" and "no" symbols. Thus:

VV indicates an emphatic "yes", or that the item is always present.

V means "yes," or that this is the usual or customary practice.

OV indicates mixed practice. This thing is sometimes done or sometimes not done, or is partially present or partially absent, etc.

O indicates "no", or that this is not the usual practice.

OO indicates an emphatic "no", or that the thing is never done.

The surveyor should try not to use this five point scale, however, as it introduces a subjective standard. *Wherever it is at all possible he should use simply the V or O symbols.*

a, b, c, etc., indicate a particular answer given by a person to a question. Thus, if the answer to question No. 134 ("What is the nature of the ground between the W.C. and the water sources?") is "earth", this being the third of the three answers indicated, it will be

Appendix I.

designated c. 134c then would identify both the question and the answer. 127b would mean that drinking water in the summer time is drawn from a well. 136a would mean that the water container is washed daily, etc.

In the schedule the sign * means that the answer in the space following it is to be given in numbers. The sign * means that the answer in the space following it is to be given in key letters, which always exist beside that section, and which refer to one of a list of general or standard answers, (as in the list of relatives on page I, question 16).

The reference at the bottom of this section means that copies of the schedule may be obtained from Professor Stuart C. Dodd at the American University of Beirut, Syria. This Trial Form A is a revision of the preliminary form which was tried out in the villages after conferences with the village clinic of the Near East Foundation, the professors on the medical faculty of the American University of Beirut, and others with village background. It is designed for a survey during the Easter vacation of the Arab village of Jib Ramli and the Armenian refugee village of Moushashen, each approximately 50 kilometers to the west of Hama.

Section III

Instruction for "Infants" Section. Page 6.

This general section is not a record of hygienic practices, but is more a record of health conditions which may serve as criteria against which to check the hygienic practices recorded below.

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137. As infants are defined as all children under two years of age, there may be two such belonging to one mother. Hence on this page two spaces are left, one for the answer for the youngest, baby A, and the other for the next oldest, baby B, if such exists. The weight should be recorded in the metric system.
138. "At birth," means whether the baby was a normal nine months delivery, or came prematurely at seven or eight months.

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139. "Teething" means the appearance of the first tooth.
140. Age of sitting, means the age to the nearest month when the child sits up unsupported.
141. "Walking," means taking more than one step unsupported.
142. "Talking" may be defined as the age at which the child first pronounced at least three words, preferably identified by some person other than the doting mother.
143. The age of weaning, means the age at which nursing was stopped completely, not the age at which supplementary feeding may have been begun.
144. The general condition of the baby, as to the presence of skin rash, insect bites, obviously sore eyes, and malnutrition or swollen abdomen, are only rough observations, such as a lay person might be expected to make.
145. Does the baby vomit immediately after feeding, or long after?
146. Does the baby vomit only a spoonful or so of its feeding as any normal child may do when it has had a little too much, or does it vomit all its feeding, indicating some digestive upset? This question is best asked for the last 24 hours and not in general.
147. How many times a day does the baby have a movement? Indicate by writing the number.
148. Are the movements during the last 24 hours liquid, soft, definitely formed, or constipated in hard balls?
149. Are there curds visible? Is the color of the movement green? or the normal yellow? Are there traces of blood clots or mucous? have worms of the flat or ring variety been observed in it?

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151-161. What is the child fed? Milk? water? potatoes? oranges? grapes? greens? butter? eggs? cod liver oil? bread soaked in milk? cereal? or the adult diet of the family?	31
162. How frequently is it fed each item? daily? occasionally? never?	31
163. Check "yes" for whichever of the items are cooked.	
164. Record the age in months of each baby when it started any of the supplementary foods after milk. Note that the foods are grouped in classes chiefly from the point of view of vitamine content.	
165. What is the source of the milk for the baby?	31a-c
166. In case the milk comes from an animal, how is it treated? Is it scalded, i.e., just raised to boiling point? boiled five minutes or more? made into laban?	31d
167, 168. Is it some tinned variety of milk, either powder or liquid? In either case, is the water that is added to it boiled?	31c, e
169. Is the baby fed whenever it cries, or at regular intervals?	33
170. In case the baby is not nursed, is it fed from a bottle? a cup? a spoon?	
171. Are suckling babies held up immediately after feeding?	38
172. Do they give the baby castor oil regularly as a part of its diet? Check "no" if they give castor oil only occasionally for medicinal purposes.	
173. To keep it quiet do they give the baby "hindi grass"? hashish? opium? or other drug?	
174. What is the type of diaper used? Is the baby laid with sand or earth in contact with its skin, or do they use a mattress with a hole in it and a pot underneath and no diaper attached to the baby itself?	34

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	Key to Form B numbers
Or do they use a pipe or tube attached to the urethra to lead the urine off to a pot without wetting the sheets? Or do they use some sort of cloth diapers? Finally, do they use the inner tube of an automobile tyre, or any rubber sheeting in addition to the cloth?	
175. How frequently is the sand or cloth diaper changed? approximately every two hours? four hours? six hours?	35
176. If a bottle is used, are the bottle and the nipple cleaned? are they boiled?	32
177. How frequently are the diapers, if such are used, washed?	36
178. How frequently are the baby's other clothes washed?	
179. How frequently is the baby's body bathed?	37
180. For washing the diapers, the clothes and the baby, do they use hot water?	36*
181. For each of the above, do they use soap?	36*
182. Are the diapers and clothes put out in the sunlight? Is the baby given a sun bath?	39
183. Is the baby immersed in the bath, or merely sponged off?	
184. Is the baby oiled? Is it powdered either after bathing, or as a substitute for bathing?	
185. Do they especially clean the baby's ears?	
186. Do they clean the baby's nose with a bit of cotton, olive oil, or other method?	
187. Do they clean the baby's eyes with boric acid? with water boiled especially for the purpose?	
188. Do they paint the baby's eyes with "kohl" (a black dye)?	
189. Do they attempt to clean the inside of the baby's mouth in any way?	
190. Do they especially clean the genitalia?	

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191. Do they clean away the crust whenever it forms on the scalp?
192. Do they cut the finger-nails and toe-nails?
193. Does the baby lie tightly tied, or does it have freedom to move its arms and legs?
194. Does it sleep under a mosquito net. or under cheesecloth?
195. Does the baby spend at least an hour outdoors every day?
196. Does the baby sleep with the mother at night?
197. Does the baby lie in a cradle? a bed? a hammock? on the floor?
198. In order to put a child to sleep, which of the following actions are resorted to? Rocking, nursing, cuddling it, singing to it, distracting it with some bright object or noise, changing its diapers if wet, giving it a pacifier to suck, letting it suck its thumb, getting up the gas, loosening body clothes or bed clothes, changing the temperature, adding more clothes if the baby is cold, or taking off some if the baby is hot, protecting the baby from insects, letting it cry itself out, some other action, doing nothing?
199. Which of the above list of actions are resorted to to stop the baby crying?
200. Record notes on any of the above points or any other information volunteered by the mother about the baby.

Instructions for "Property" Section. Page 7.

Section VI
Form B

201. Are the family squatters in the house without legal right to it? Are they tenants? Is the house mortgaged? Do they own it free of debt?
202. How many rooms are there on the premises, and to what use is each put? Using

30

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the letters in the key at the right indicate the use of each room.

Under 1 should always be entered the room where the food is prepared, as the kitchen, regardless as to whether it is used for other purposes or not.

Under 2 should be entered B, the bedroom, provided the food is not prepared there, and regardless as to whether or not it is used for purposes other than a bedroom.

C, living room, should be entered only when the room is used for that purpose alone, and not for a bedroom, etc.

D, dining room, should be entered when the room is used only as a place in which to eat and not as a place in which to prepare the food, or for other purposes.

E, a store room, is for any room where materials are stored or junk is deposited.

F, a hallway, is only for spaces used as passageways to other rooms, and not for any place in which a person or animal sleeps.

G, W.C. or toilet, whether in the house or in an out-house.

H, means a stable in the house, as when one of the animals enters by the same door as the people and sleeps in one of the rooms of the house.

I, means a stable, the entrance to which is from outside and which is separate from the rooms used by members of the family.

J, means a stable which is a separate building from the house.

K, is a basement or a cellar.

L, may be prefixed to any of the above rooms in case they are on a second floor.

M, means a shed for cattle, or a "khaymi" or booth in summer for a family.

N, means a chicken coop, or an enclosed and covered place for animals smaller than a donkey.

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| 203. | The surveyor should estimate the number of square meters in the floor area of each room. He should previously practise until he can do this within 20% accuracy. | 69c, e |
| 204. | The surveyor should estimate the area of each window and add the estimates to get the window area for each room. The window area should include the door, as the point of this question is information in regard to the total apertures for ventilation and light. | 69b, d |
| 205-208. | In each room are the windows screened? Have they glass panes? Are they covered with wooden shutters? Are they open with no means of excluding weather? | 70 |
| 209. | What is the condition of each room? Mark P for blackened by smoke, Q for cobwebs, R for unswept litter about, and S for pronounced unhygienic odors. | |
| 210. | In case the surveyor does not have opportunity to inspect every room in detail, the general condition of the house may be checked in the four spaces P-S. | 72 |
| 211. | How frequently do the owners say the main rooms of the house are swept? | |
| 212. | If the floor has a washable surface, how frequently do they say it is washed? | |
| 213. | Is the floor made of mud? mud plaster or sawwak (i.e. mixed with straw)? stone pavement? covered with lime plaster? cement or concrete? wood? tiles? Is there reed matting on the floor? Is it calcimined or painted? Is other floor material used? | |

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| | Is the floor covered with any carpeting or textile? | |
| 214. | What are the walls made of, or covered with? Enter tents under textile and lean-tos of leaves and branches under "other". | |
| 215. | Similarly, what is the material of the roof? | |
| 216. | The yard may be considered a zone of 10 meters around the house, or half way to the neighboring house, or to the street if that is less than 10 meters away. Is the yard natural earth, or is it paved in any way? | 77 |
| 217. | Are there any vegetables, flowers, vines or trees growing in the yard? Record the number of trees. | |
| 218. | Is the yard walled in or fenced enough to exclude animals or to keep the children inside, if there were a gate? | |
| 219. | Are there visible in the yard, any human feces? animal feces? decaying matter? fresh dung drying for fuel? Is it swept and clear? Do not count fuel already dried and piled ready for use, as dung drying. | 77 |
| 220. | What animals do the family own? | |
| 221. | Record the number of cows, oxen, goats, sheep, hens, other fowls such as geese, turkeys or pigeons, donkeys, mules, horses, buffaloes, camels, dogs, or other livestock, such as pigs. | |
| 222. | How many of each of the edible varieties were killed for food during the last twelve months? | |
| 223. | How many of each of the above were born in the last twelve months, i.e., what was their gross increase in ownership through birth and hatching, exclusive of purchase? | |
| 224. | Note whether any of the animals are kept in a room in the house in the winter time by indicating in an appropriate column the number (not a letter) of the room as given above in question 202. | 67 |

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225. Does the family have any irrigated, or garden land? unirrigated, but cultivated land such as wheat land? cultivable, but uncultivated land? any untillable rock, mountain, or forest land?
226. Record the area of each type in square meters, reducing the local "dunnum" to the metric system.
227. How is each type of land owned? Is it owned out-right (A)? or mortgaged (B)? rented (C)? or communal land (D)?
228. Note any additional information regarding property.
Instructions for "Waste" Section. Page 8.
229. Where does the family deposit feces or go for W.C. purposes? In the field or garden? in the yard or street? in a container? in a stream or body of water? in the fire? buried daily? If a container is used, is it open to flies? 65.
230. By which of the methods above does the family dispose of garbage? 64
231. By which of the methods above does the family dispose of other waste, if they have any?
232. If they have a W.C. how many people use it regularly? 66a
233. What is its approximate depth in meters? Less than 1? less than 2? less than 3? 66b
234. Is the W.C. located in the house or outside? 66c
235. Is the W.C. fly-proof inside and is it fly-proof outside? 66d, e
236. What is the nature of the covering of the W.C. hole inside? Is the W.C. just an open hole or does it have a seat?
237. Is it reasonably clean? 66g
238. Are there flies buzzing about? (The question will take into consideration the 66f

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- hour of the day and temperature when the surveyor made his visit, as indicated on the first sheet).
239. Do they pour any cleanser or disinfectant down the W.C. hole, such as phenol, ashes, earth or sand, lime, water, or other substance? 66h
Instructions for "Insects" Section. Page 8 con.
Section V
Form B
240. Which ones of the following general remedies does the family use to combat insects, when they are troublesome in summer?
- A. Do they screen their windows? Check "yes" and "no", if some are screened and some not.
- B. Do they screen the doors? (The League of Nations has supplied free screening for all the refugee houses.)
- C. Do they use netting of any sort to cover the beds? 51
- D. Do they tuck their heads under the bedclothes when mosquitoes and flies are bothersome? 50b
- E. Does the fire place lack a chimney so that the smoke fills the room making the eyes smart but automatically driving out mosquitoes and reducing the number of flies? 50c
- F. Do they use any sort of spray? 50d
- G. Do they ever fumigate? 63a
- H. Do they use kerosene to pour down cracks in wood-work to kill bed-bugs? Do they pour it on water surfaces to prevent mosquitoes breeding? 63g 54d
- I. Do they use any sort of poison, such as powders for killing insects? 54d, 55d 60e, 62e, 63c, e
- J. Do they wash themselves with hot water to get rid of body lice? 62d
- K. Do they depend on manual killing, as in swatting the flies or catching lice, fleas, etc. 55a

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| L. Between meals is the food kept covered from insects? | 57 |
| M. Do they seek relief from insects by moving their sleeping quarters? Often villagers abandon the house to fleas in the summer time and sleep in booths outdoors. | 50a
60h |
| N. Do they spread garments out in the sun to get rid of lice, etc.? | 63b |
| P. Do they depend on shooing the flies and mosquitoes out of the room? | |
| Q. If they have other methods, note them under No. 270. | |
| S. Do they know that mosquitoes bring malaria, and that other insects, such as flies, may transmit infectious diseases? | 59 |
| 241. Are there mosquitoes in season? Check VV, V, OV, O, OO, according to the statement of the family. In addition to the general remedies which should be noted by a letter at the bottom of the column under mosquitoes after the * sign, note the additional special answers regarding mosquitoes. Does the family retire at dusk to escape mosquitoes? Are there stagnant pools, or other breeding places? The surveyor should observe this himself and not depend upon asking the family. Does the family, or does the community, make any effort to drain or to fill in the breeding places? to cover wells and cisterns? to pour kerosene or other oil? to stock the breeding places with larvae-devouring fish? | 49
53
54 |
| 242. Are there many flies in season? Check in one of five degrees (VV, V, OV, O, OO) after the word "flies", according to the family's own statement. Do they use a sticky surface, such as fly paper or glue of local manufacture? any sort of fly trap? or any of the general remedies listed under | 55
59* |

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| No. 240 (which should be here noted by letter after the * sign). | |
| 243. Check, in one of five degrees according to the family's own statement, the presence of fleas. In addition to the general remedies, which should be noted by a letter after the * sign, do they use floor-paste of red earth and water as a sort of calcimine to cover eggs and young fleas? do they use any sort of flea powder? | |
| 244. Check in one of five degrees the presence of lice. Do they combat it by having the hair close-cropped? by combing the hair? or by any of the general remedies (which should be noted by letter)? | 62 |
| 245. Do they have bedbugs at any time during the year? Check in one of five degrees according to the family's own statement. Do they combat bedbugs by pouring hot water into cracks? using vinegar? by the use of powders? by any of the general remedies? Note by letter. | 63 |
| <i>Instructions for "Sleep" Section. Page 8 con.</i> | |
| 246. How many mosquito nets for beds does the family possess? | 51 |
| 247. How many of the family are covered by these nets when they are used in the mosquito season? | 51 |
| 248. Examine the nets and see whether they have tears and holes in them, or whether they are reasonably mosquito proof. | 51 |
| 249. Is the material woven especially for netting, or is it cheesecloth or some other material? | |
| 250. How frequently do they use their nets in the mosquito season? Always as a regular practice every night? only if they note a few mosquitoes around? only if the mosquitoes are very numerous and bother- | 51 |

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- some? very rarely? never? Care should be taken not to ask this question in any leading form that suggests an answer.
251. In case they have no nets, do they desire them or are they apathetic about their desirability?
252. When sleeping how crowded is the family? Record more specifically.
253. How many sleepers (including servants and guests who are staying in the house for at least a month) are there in the household? 75
254. In how many rooms did the family sleep last night? Note that these two questions are checks on information previously gathered on page 1 and page 7. 75
255. On how many mattresses do the family sleep? 76
256. On how many bedsteads, if on any, do they sleep?
257. Do they sleep on a raised platform or on the floor?
258. If they sleep with the windows regularly open, check "yes". If customarily closed, check "no." Whereas, if it depends on the weather, open when warm, closed when cold or rainy, check "yes" after "by weather."
259. Do they change from day clothes into night clothes? Check "no" if they merely remove their outer garments at night.
260. How frequently is bedding hung outdoors to air in the sun?
261. Do they have any sheets or washable bedding or only blankets and quilts?
262. If they have sheets, how often do they wash them?
263. How many hours did they sleep last night?
264. Do they customarily retire at dusk? at a fixed hour?

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numbers.

265. Do they customarily rise in the dark? around sunrise? at a fixed hour?
266. Do they take siestas?

Instructions for "Heating" Section. Page 8 con.

267. How cold was it last winter? Did they have any snow? frost or freezing? any hail? only rain? If the amount of rainfall for the year is known, it should be entered here in centimeters.
268. How do they keep warm in cold weather? With a stove? brazier? a hearth (and does it have a chimney)? do they simply put on more clothing? do they stable animals in the house with themselves? do they do nothing? 73.
269. What fuel do they use? Cakes made of animal dung? sticks or reeds from a marsh? kerosene in a primus stove? charcoal? wood? 74.
270. Record any notes. It might be well to record here whether the family were co-operative in giving information with suggestions to guide the surveyor on a return visit, if such is necessary. If the information secured is incomplete, a record should always be made here of whether a return visit is necessary.

The Score Card for Form A and the Manual of Instructions to Scorers are not reproduced here. They may be consulted in the hectographed volume, Department of Sociology Yearbook, A.U.B., Vol. III, in the Library of the American University of Beirut.

APPENDIX II

Exhibit of Brief Scale, Form B

For fuller explanation of items see the exhibit of the
full Scale in Part I, C, 2

Family
number _____

BRIEF* HYGIENE SCALE FOR FAMILIES

In Syrian Villages

*This Brief Scale, comprising 20 scored questions and earning a maximum score of 500, is a selection from the Standard Scale of 55 scored questions earning 1000 points.

This Brief Scale showed a validity correlation of .98 with the Standard Scale ; and a reliability correlation of .90 on repetition, in rural samples. For full description and instructions for use see "A Controlled Experiment, on Rural Hygiene in Syria," S. C. Dodd, American Univ. of Beirut, Social Science Series, No. 7, 1934.

IDENTIFICATION DATA & VITAL STATISTICS

1. "What is the full name of the head of the family ?"
Note any supplementary or alternative names. _____
2. "What is the name of the village ? (Note that all Arabic names should be recorded in standard transliteration to English letters. When in doubt, record it in Arabic script also). _____
3. What is the government administrative district ? _____
4. 1st visit: Name of recorder _____ Questioner or interpreter _____
5. 1st visit : Hour _____ Day _____ Month _____ 19 _____
17. "Has anyone died in this household in the past 24 months ?"
Number of deaths _____ 18. Ages at death () () ()
20. "How many babies has (1st wife) had in her lifetime ?" (include stillbirths and any deliveries after 6 months terms ; exclude abortions or miscarriages before 6 months).
Births: 1st wife _____ 2nd _____ 3rd _____
21. "How many of her (your) children died at any time since birth up to 21 years of age ?" Ask similarly for any other wives.
Minors dying : 1st wife _____ 2nd _____ 3rd _____

SCORING RULES (abbreviated)

- 1) a + sign = an affirmative answer = maximum score.
- 2) a \pm sign = a partial or approximate answer = half score (discarding all fractions, however large).
- 3) a - sign = a negative answer = zero score.
- 4) Numbers besides parentheses indicate the maximum score. Discard points earned in excess of this.
- 5) Do not assign negative scores (i.e. below zero).
- 6) Interpolate the score of missing items (up to 125 points) by the formula :

$$\frac{500A}{M} = \text{Corrected score} \quad \begin{array}{l} A = \text{total score of questions answered} \\ M = \text{max. score of questions answered} \end{array}$$

A	Score for page 2	_____	M	score for page 2	_____	
"	"	"	3	"	"	3
"	"	"	4	"	"	4
Total A.		_____	Total M score		_____	
score						

Corrected score = _____

SELECTED QUESTIONS ON HYGIENE

22. MALARIA

- a. "What do you do to stop malaria?" b. "Anything more?"
Take quinine 10 () Daily dose of 12 to 13 grains or between
.8 and 1.5 grams 10 ()
c. How long do you keep on taking the medicine?
Kept up, 2 points per week up to five weeks 10 ()
Take plasmoquine or atebria as per doctor 30 ()
Rest in bed 2 () Use a bed net 1 ()
See a doctor 3 () d. What causes malaria?
Know mosquito is the carrier 4 ()

23. DIARRHEA

- a. "If you have diarrhea, what do you do?" b. Anything else?"
(Include any loose movements, also blood, or mucous).
Take a doctor's medicine 20 () Take a purge 8 ()
or injection 4 ()
See a doctor 6 () Eat leban 4 ()
Rest in bed 2 () c. What causes diarrhea?
Drink rice water 3 () Know diet as source 8 ()

24. SMALLPOX

- a. "What do you do for smallpox?"
Isolate patient 3 () See a doctor 2 () Rest in bed 2 ()
b. "Have you been vaccinated?" c. "How many of the family
have been vaccinated?" Mark \pm if some but not all, have ever
been vaccinated. Vaccinated 5 () If \pm , ask d. "How long ago?" Average
the periods since vaccinations, for completing the scoring formula:
6—(years ago) = Score 5 ()
c. "How does a person get smallpox?" Know contact as carrier 8 ()

30. INFANT* INSECT-PROOFING

With what is the baby covered? May I see? The surveyor should
verify all these practices by asking to see the equipment where-
ever possible.
Sleeps under net = 15, \pm = 7. Credit in full (15 points) if in
winter with no insects about, and netting is shown to surveyor
for use when there are insects.

31. INFANT* DIET

- a. "What is the baby fed?" Check \pm and cut score in half (dropping
fractional remainders) if these practices are not daily but only
"usually", "often", "sometimes", "if we have it", etc. Check a,
b, c \pm if two of them are used, supplementing each other.
d. If animal milk is used, "Does the baby drink the milk raw as you
get it from the animal, or do you prepare it in some way?"
e. "Do you give it water?" "How often?" "Is it boiled?"
f. "Do you give it greens or the juice of tomatoes, or oranges or
grapes?" "Daily?"
g. "Do you give it butter? Eggs? or cod liver oil?" "Daily?"
h. "Do you give it cereals or bread softened in milk or water?"
i. "Does the baby eat a little of almost everything that you eat?"

Total score of page 2

* Infants mean children 24 months, or less, of age. In case there
is no infant in the family, change the questions from the present
to the past tense (if there are older children) or to the future
conditional as "What would you do, if" etc., (if there are no
children). Ask as for a baby at the age of 6 months. If the in-
formant will not reply carefully to such an unreal situation, omit
these questions and interpolate their score.

Score:
Max. Actual
40 ()

Score

If there are two babies under 24 months, average their scores:
Over 1 yr. Under 1 yr.

- a. Human milk, daily 5 () 60 ()
b. Animal milk or leban, daily 10 () 15 ()
c. Tinned milk daily 5 () 15 ()
d. Boiled 10 () 25 ()
e. Water daily 10 () 2 ()
Boiled 5 () 6 ()
f. Tomatoes, oranges, grapes,
greens, any one 20 () 8 ()
g. Butter, eggs, or cod liver oil 20 () 16 ()
h. Cereals or soaked bread 20 () 8 ()
i. Adult diet 5 () 0 ()

Total () ()

40. ADULT MENU

What did you eat for your last meal? Ask completely for
48 hours even to minor items of butter, sugar, olives, cheese, etc.

- | | 1st day | 2nd day |
|------------------------|---------|---------|
| Cereals, bread | 5 () | 5 () |
| Milk, milk products | 5 () | 5 () |
| Vegetables, fruits | 4 () | 4 () |
| Meat, fish, eggs, nuts | 3 () | 3 () |
| Fats (olives), sugars | 3 () | 3 () |

41. BOILED MILK "Do you ever drink milk raw (unboiled)?"

45. SOURCE OF WATER

- a. "Where do you get your drinking water from?"
b. "Is it from the same source all the year?"

- | | Spring | Covered
Cistern | Well | Stream | Open
Pool |
|-----------------|--------|--------------------|----------|--------|--------------|
| Summer 50 ? () | 40 () | 50 ? () | 50 ? () | 0 () | |
| Winter 50 ? () | 40 () | 50 ? () | 50 ? () | 0 () | |

If § 46 is negative, answers marked 50 ? get 50 points ; if § 46
is affirmative, the score for § 45, 46, 47 together is given by
§ 47. a \pm gets half credit.

46. EXPOSURE TO CONTAMINATION

The surveyor should visit the source and verify the informant's
replies to: Is there a W.C. or stable within thirty meters of the
spring (well, stream, pool)? Is such a source of possible con-
tamination on the same level or higher up? what is the nature of
the ground between? Is it easily permeable sand, gravel, or mixed
earth and stones, or is it less permeable hard clay or solid rock?
For streams, is there a village upstream?

- W.C. in 30 meters () Level or higher ()
Permeable Ground () Village upstream ()

47. PURIFYING

In case § 46 is answered affirmatively, "Do you boil or filter all your
drinking water?" If filtered, ask to see the filter.

- Boiled 50 () Filtered 20 () § 45-47:
Average summer and winter, if different.

48. SOAP.

- a. "How many cakes of soap do you use up in a month for washing
around the house, dishes, clothes, baths, and for everything?"
b. "Let me see the size of your cakes." Measure it on the scale on
the edge of this page. Score = annual liters per person times 2.
Length _____ cms. Width _____ Height _____ Vol. _____ cu. cms.
Number of cakes per month \times 12 = _____ number of cakes
or per week \times 52 = _____ per year
Cu. cms. \times cakes per year \div 1000 = _____ liters annually
Persons in household (See § 76) _____
Liters annually per person _____

Total score of page 3 = _____

Centimeters : 2 3 4 5 6 7 8 9 10

51. MOSQUITO AVOIDANCE Score
20 ()
- a. "Do you sleep under nets?" b. "Will you show them to me?"
c. "Do you use them every night in summer or only occasionally?"
d. "How many persons are covered?"
Persons covered _____ Percent covered _____
Number in household _____ Score = $\frac{\%}{10} \times 20 =$ ()
54. MOSQUITO PREVENTION 40 ()
- "Have you tried to prevent mosquitoes from breeding? Check claims
of measures taken by inspecting the spots. On family's property In the Village
- | | | | | |
|---------------------------------|---|-------|---|-------|
| a. Stocked pools with fish | " | 5 () | " | 5 () |
| b. Drained, or filled them | " | 5 () | " | 5 () |
| c. Covered, or screened them | " | 5 () | " | 5 () |
| d. Oiled, or dusted with poison | " | 5 () | " | 5 () |
57. FOOD COVERING 5 ()
- Fly-proof = 5
"In what do you keep your food between meals? Will you show
me?" Look for dirt, garbage, or food exposed to flies.
58. KNOWLEDGE OF FLY BREEDING 15 ()
- "Where do flies breed?" "In what other kinds of places?"
Human feces 3 () Manure 3 () Carcasses 3 ()
Garbage 3 () Other decaying matter 3 ()
59. KNOWLEDGE OF FLY MENACE 15 ()
- a. "What harm do flies do?" b. "How do they do their harm?"
"Anything else?" The spontaneous answers will vary in form.
Check + after each point listed opposite, if it is stated clearly:
check ± if it is stated vaguely, or only implied.
Carry diseases 8 () especially to infants 1 ()
from feces, etc. 2 () to food 2 ()
or from diseased skin and eyes to healthy ones 2 ()
64. GARBAGE 25 ()
- "Where do you throw your garbage? Inspect the place!
In street or yard 0 () In garden or field 5 ()
In open container 0 () In fly-proof container 15 ()
In stream or water 5 () In stable or fed to animals 5 ()
Buried 20 () Burned 25 ()
67. ANIMALS 15 ()
- "Where do you keep the animals at night in cold weather?"
Always sleep outside the family living room 10 ()
Count a stable which opens into a living room as +
"Do chickens ever come in here?" Look for droppings, etc.
Chickens never enter 5 ()
68. FLOORING 10 ()
- With what material is the living room floor covered?
If less than half the area is covered, check ±.
Mud 0 () Stone 3 () Concrete 5 () Tiles 8 ()
Wood 3 () Paint, matting, carpets, skins, or rugs 2 ()
76. BEDS 10 ()
- a. "How many beds have you?" A bed means a bedstead; or if none,
a mattress on floor or platform; or, if no mattresses exist,
consider as in one bed all who sleep under one cover (lehaf) in winter.
b. How many people sleep in this house? Score = $\frac{10 \times \text{beds}}{\text{sleepers}} - 2 = \frac{10()}{()} - 2$
- Total score of page 4 = _____

APPENDIX III

Exhibit of clerical worksheets (correlation scattergram) and
costs for this experiment.

DATA ON COSTS OF THE RESEARCH PROJECT

To facilitate planning research budgets, a report of the cost of the factors in previous projects is useful.

As the factors in projects vary, as currencies, price levels, and local conditions vary, it was thought most serviceable to report in terms of units of time and personnel required.

Survey expeditions. Food, transportation, and minor other expenses. 60% of total cost.

April, 1931—8 persons, 10 days, to Moushashen for initial survey (300 kilometers from Beirut; 1 to days by automobile, depending on state of roads). April, 1931.—5 persons, 7 days to Moushashen to complete initial survey. August, 1931.—5 persons, 7 days, to Moushashen for survey of seasonal difference. September, 1931.—1 person, 30 days, to Bikâ' villages for a checking sample. May, 1932.—1 person, 4 days, to Moushashen to supervise hygiene education. April, 1933.—12 persons, 11 days, to Moushashen for terminal survey. September 1933.—3 persons, 6 days, to Talabaya for interviewer error survey.

Materials. 5% of total budget.

Medical supplies

Gifts for cultivating good will

Printing 3 editions of hygiene schedules.

Clerical wages. 35% of total budget.

Scoring approximately 1000 schedules, including	hrs.
all forms and rescorings one hour @ approximately	1000
Graphing 1200 distributions, 1½ hours @	1800
Correlations, 250 coefficients, 2 hours @	500
Miscellaneous calculations	100
Checking calculations	200
Typing and preparations of ms.	150

Approximately 18 piasters (= 15 cents in 1929) per hour.	3750
----------------------------------------------------------	------

Volunteer Services of students, faculty, and others are not included in the clerical costs.

All correlations were Pearson product-moment coefficients (except a few bi-serial *r*'s, as noted, and a few curvilinear correlation ratios, as noted). The clerks used a Monroe calculator and a form sheet. See next page for an exhibit of the form sheet for the reliability correlation of .92 between the scale scores from 45 male informants and 45 female informants in the same families.

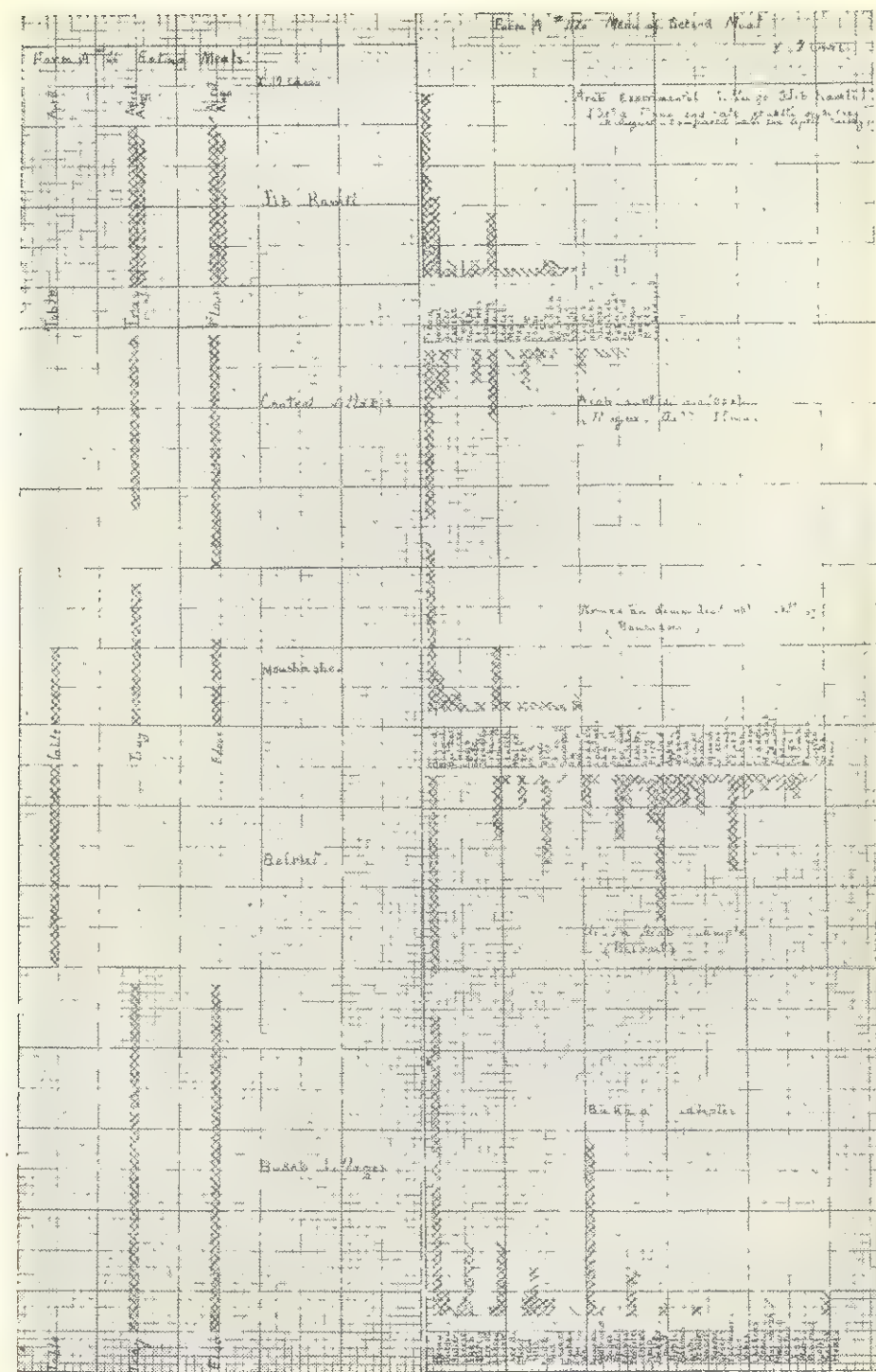


Exhibit of distribution graphs of two Form A questions illustrating the method of comparison of samples in the 960 unpublished graphs

The 10 comparative frequency distributions of answers to two Form A questions which are shown on the work sheet on the next page, illustrate the item analyses that were carried out on 96 such work sheets. See p. 20, Part I, B, "Studies on Form A", "1. Item Analyses", "a. Frequency Distributions" and "b. Comparison of graphs from six population samples." See also pp. 34, 35, Part I c. "The Revised Scale—Form B", "1. Procedure in Revision."

The left hand graphs are for question No. 66 (See Appendix I). It shows how universally the villages eat their meals off a tray or from dishes spread on the floor, while city folk (Beirut) use tables. Moushashen Armenian villagers, having a city background, show a division between the urban and the rural culture pattern.

The right hand graphs compare the frequency of different dishes in the menu of the second meal of the day in the experimental, the control, the demonstrational, the urban, and the Bikâ' samples.



APPENDIX V

Statistical summary of the activities of the Clinic of the
Near East Foundation :
an analysis of an agency generating hygienic forces

STATISTICAL ANALYSIS OF AN AGENCY
GENERATING HYGIENIC FORCES

The Itinerant Clinic of the Near East Foundation

Report May—Nov. 1932

Table 77

I. Clinic Health Centers:

Number of clinics each month: Permanent 3, Ambulance 1, Total 4.
Total number of villages served: 9 regularly, 15 others irregularly.
Total number of clinic sessions held from May-Nov. 1932: 494.
Average total number of persons served per month: 1,259.

	RIHANIÉ DISTRICT		MASYAF DISTRICT		AMBULANCE		TOTAL	
	No. of Patients	No. of Treatm'ts	No. of Patients	No. of Treatm'ts	No. of Patients	No. of Treatm'ts	No. of Patients	No. of Treatm'ts
1. General dressings or treatments								
Children	1,589	4,680	1,189	2,414	105	170	2,599	7,263
Adults	812	2,525	482	1,171	56	79	1,350	3,793
2. Eye treatments								
Children	863	5,438	1,307	3,061	82	82	2,252	8,581
Adults	319	1,345	833	1,750	89	89	1,241	3,184
3. Scalp treatments								
Children	47	202	126	570	—	—	173	772
Adults	6	22	—	—	—	—	6	22
4. Quinine doses (preventive)								
Children	1,004	5,559	1,369	4,115	78	78	2,451	9,752
Adults	553	2,774	1,090	2,742	33	33	1,632	5,549
5. Quinine injections								
Children	337	585	65	76	17	17	419	681
Adults	249	425	65	111	25	25	339	549
6. Cod liver oil								
Children			No	issue	during summer		months	
Adults								
7. Extra food								
Children	190	2,003	119	382	—	—	282	2,385
Adults	95	802	20	109	—	—	115	911
TOTALS							12,859	43,442

II. Milk and soap issued: To babies, To day-nursery children, Total

Milk: Rihanié district	316/840 (babs./cns.)	359/150 cns.	675/990
Moushashen	202/479 "	215/61 "	417/540
Soap: Rihanié district	575/749 (fmls/cks.)	376/73 cakes	951/822
Moushashen	309/571 "	215/34 "	524/625

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III. Physician, Clinic services of:	Rihanié dist.	Masyaf dist.	Total
1. General physical exams.			
Children	829	299	1,128
Adults	163	246	409
2. Hospital cases			
Children	17	2	19
Adults	0	3	3
3. Emergency cases			
Children	12	—	12
Adults	—	—	—
4. Patients sent to physician			
Children	69	—	69
Adults	31	1	32

IV. Day-Nursery

Number of day-nurseries: minimum 2, maximum 3.

Total children enrolled from May-Nov. 1932: 708.

Average 101.

Total attendance all sessions, all nurseries, for 5 months: 7,462.

V. Home Visits:

	Rihanié dist.	Masyaf dist.	Total
Number of villages in each district	4	5	9
1. Total number of homes in each district	1,136	906	2,042
2. Total number of homes visited	900	658	1,558
3. Total number of visits made in seven months	1,981	738	2,719
4. Total number of persons affected by these visits in seven months	4,184	3,516	7,700

VI. Mothers' Classes:

1. Number of classes	14	8	22
2. Total number of mothers enrolled in seven months	530	271	801
3. Total number of sessions held in seven months	47	27	74
4. Total attendance all sessions, all classes, for seven months	1,091	911	2,002

VII. Girls' Health Classes:

1. Number of classes in seven months	14	16	30
2. Total number of girls enrolled in seven months	301	268	569
3. Total number of sessions held in seven months	50	50	100
4. Total attendance all classes, all sessions, in seven months	660	618	1,278

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Appendix V.

VIII. Health Talks and Inspections Rihanié dist. Masyaf dist. Total

1. Number of schools inspected in five months	8	5	13
(No inspections were made in August and September in Rihanié district and in May and June no inspections were made in Masyaf district)			
2. Total number of talks given and inspections made in five months	59	10	69
3. Total number of children in the schools during five months	447	79	526
4. Names of persons making visits, teaching classes, giving talks and making inspections	Misses V. Azarian Y. Avedissian L. Krikorian A. E. Slack	V. Shagaugian E. Medzolian A. E. Slack	

IX. Recreation

1. Number of playgrounds: 5.
2. Number of football teams: 2, through the year.
3. Number of boys and girls using these grounds: 300 through seven months.

Note: We have no resident recreational leader in our villages. Children use the play grounds when they have time, coming and going at their own inclination, with relatively little supervision and no organized games except ring games and ordinary children's games, spontaneously organized by the children, or with slight suggestions from the practical nurses and Minas. Only football is played by the teams regularly and according to rules.

Census	Births	Deaths	Left village	New-comers
Rihanié district	20	9	4	4
Masyaf district	11	9	2	0
Moushashen	3	3	2	0
Jib Ramli	3	4	0	0
Sluki	2	1	0	0
Sarmiah	2	1	0	0
Jlaymy	1	0	0	0

APPENDIX VI

Excerpts from the Narrative Reports of the Clinic

EXCERPTS FROM THE NARRATIVE REPORTS
OF THE CLINIC

The present appendix supplements the statistical analysis given in the previous appendix by presenting a more intimate picture of the work of the Clinic of the Near East Foundation. It aims to give the reader more insight into the personality factors within the agency which was generating forces. For this purpose selections from the monthly narrative reports of Miss Slack to the Foundation are presented. They have been edited to a limited extent to connect them together and to make their meaning clear even though each excerpt is out of its context. The excerpts are otherwise quotations, as these reflect the point of view of the personnel of the Clinic better than the author could describe the incidents she narrates. This appendix constitutes an expansion of Part IV, C, i, a and f, the sections dealing with the personnel and the program of the Clinic.

(August 1932).

"Village nurse on horseback. We have a horse now, and our village nurse in Moushashen is able to make regular rounds in our villages in that district. Each village is visited once a week. Vartui visits each on horseback, and holds a clinic in one of the houses of the village. She has organized a regular class for young girls in Jib Ramli. In this way she spends three days each week in these villages, and the remaining three days in Moushashen. This is rather an exhausting job, but at the same time it is an interesting one for a young Armenian lady visiting Arab villages to carry higher standards of health and cleanliness to these villages. Our work in that district is getting better organized as we settle down in our new center. Now we can follow up the cases regularly, which is a great advantage."

(May 1931).

"Malaria Prevention. The malaria season is here, but the people are better prepared to combat it. Due to quick treatment by our practical nurse the attacks are not so long and much energy is saved which otherwise would be used up by temperature. The first step in the treatment is the enema, followed by a warm bath, removal of all superfluous clothing and bed covers, an alcohol rub given after the chill has passed, and an

Appendix VI.

injection of quinine. The enema and bath help almost instantaneously. The next day after the injection, the patient is invariably found making bread, sweeping the floor, or washing clothes. The above process is followed a day or two later by a dose of castor oil. Those who like it, get it at the start, but the enema is a kinder method, when one has difficulty in swallowing this dose because of an already enfeebled stomach. Quinine solution is then given regularly for a week or more."

(June 1931).

"*Problems.* Lack of education, superstition, fear. These three evils are deeply embedded in the minds of these people. Even when one thinks all superstitions have been eliminated a new one bobs up. I have proved to the mothers what water and soap will do, yet they continue to be afraid of using it themselves. One very emaciated baby suffering from malaria and developing pneumonia was brought to the clinic. Its hair was henna tinted and stiff with dye. Some old fogey had told them this would help the child to get well. The body of the child was flabby and dry from lack of water, the abdomen abnormally large. After a thorough cleansing, the poor little thing lay in my lap, and would have guzzled some warm milk, if I had not been careful. Of course it proceeded to eject what it had taken, when I degassed it, but it soon got over this and went to sleep.

"One mother sent her young husband to ask me to sell him the bath tub that is part of the ambulance equipment. He was quite willing to pay the cost of eighty piasters. The last word which we got about the tub was from the grandmother who said that her grandson seemed to grow in the water. The little boy has done a great deal by being a living demonstration."

(July 1931).

"The psychology of these people is extremely interesting. I shall try to describe an individual case having to do with the doctor and medicine. One woman at Moushashen, being in bed, supposedly suffering from malaria, was visited by Vartui and me. She was in a hot, rumpled bed, covered with a heavy winter quilt. The newly reaped wheat was in burlap bags all over the floor, the horses' harness in one corner, and the agricultural implements in another. There were two old iron bedsteads, the blind mother in one, looking very uncomfortable, and the woman in the other, groaning and wishing, I daresay, to be

Appendix VI.

out of this picture. A small girl, very mischievous, needed soap and water badly. I listened to all Vartui interpreted, taking in all the scene. I removed the heavy covers, and found a very sweaty person who had not had hot soap and water for some days. The unfinished windows allowed the famous wind of Moushashen to blow in much dust. I had a small amount of alcohol with me so I rubbed her with it, and washed her face. She then gave me two prescriptions. She had no money to buy them. We have stopped giving them medicines other than certain fundamental ones. There is a pharmacist who is trying to make his living at this village, so Dr. Kassabian, to help him, gave these prescriptions. I said that I had no funds for this kind of thing. After talking to her, I said for Vartui's instruction, 'She has stopped groaning'. I then persuaded her to go out of doors and sit on a rug, which she did with Vartui and me supporting her while she walked. Her husband and little girls joined us. I sat petting the pretty little girl. The mother began to tell of her experiences in the U. S. and how her mistress did not want her to leave to return to Armenia. When we were ready to leave the woman's whole aspect had changed. She was happy and felt better after this little talk. I then took the opportunity to explain what Foundation work meant. I told her it was the easiest thing in the world for me to fill her prescriptions, but I knew if one or two doses made her feel better she would leave the rest on the shelf. I explained that if I found they continued to be sick after the usual treatment, which is much harder both on Vartui and me, then I would be willing to fill new prescriptions, but as I had proved that they needed the fundamental knowledge of how to keep well, I felt sure that money which could be spent to improve their living conditions would be wasted on medicines that ornament the shelf. She is in much better spirits now, and says that I was right in my treatment.

"There are so many similar cases that I could write volumes, but they would become monotonous.

"I was called to see a woman in Jib Ramli who had been under quinine injections from Dr. Kassabian and Vartui for about two weeks. She had become deaf which was a great pastime for all the neighbors. While I was there everybody came along and shouted at her and tried to tell her something, shrugged their shoulders or laughed and passed on. I never saw such misery on any face, and even though the shades of

Appendix VI.

night were falling I had to stop and assist her. I pulled her out into the courtyard, and with the assistance of one of Vartui's little satellites began the investigation. I first stimulated her with camphorated oil recalling that during the war this special drug worked wonders even for warming up those that were suffering from cold. (How I long for Dakin's Solution, another war time friend, for these scalps, etc.!) I made an egg nog with a few drops of Dewers that I carry for this purpose, and forced it down. I found that her hair was matted to a heavy tuft, and well inhabited with vermin. She signed to me to cut it off. This made me gasp, because they are so fanatical about their hair. No sooner said than done. The shears were produced, and the job done while her husband commented that she was a "*Sitt American*," etc. I then tackled her ears, having prepared the way by removing the hair. After all is said and done this is clean dirt which is easily destroyed with plenty of the best disinfectant in the world—soap, water, and elbow grease. The poor thing was so relieved that she could only point toward the heavens saying something about Allah which I presume was invoking a blessing on me."

(August 1932).

"This is a season of whirlwinds and dust storms. Conjunctivitis and swollen eyes, with the accompanying agony, can be seen all around. We have taken all the necessary measures to alleviate this situation. Certainly our best prescription for them is first *cleanliness*. We advocate the use of water constantly. They call me, 'Miss Soap and Water.' The other day I washed the eyes of the whole village of Dayr Shmayl at the beautiful village spring. To keep clean is so easy, but so tragically neglected. I am so fond of water that one of the women realizing it said to me, 'Take this spring to Moushashen for your patients.' I wish I could, for we need such an ever-flowing spring for our Center in Moushashen.

"The month of August was a busy one for our unit. The scorching sun, and the dust storms could not keep us away from the villages, where our presence was needed to supervise the work of the Centers and to organize the educational side of our health program as well as the medical. Almost all of my time was spent in Moushashen Center teaching health and hygiene through active demonstration to the women, who came from the surrounding villages to seek relief with their dirty babies on their backs. I have found

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from experience that the best method to teach anything to these women is by actually doing things for them or for their babies. Formal classes and talks mean nothing to these women who have never attended any school in their life, and haven't acquired the habit of observing, of reasoning out things for themselves, and of doing things told to them. From the beginning our clinic hours have been active classes, where active individual teaching and demonstration were combined.

"*Recreation*. The children in all the villages have taken to games. Our next thought is to arrange little inexpensive playgrounds in each village as an incentive. Haiashen and Moushashen are rich in the fact that they both have a good supply of bathing water, and the children love to follow Vartui and Virgine into the water. Vartui was greatly amused one week because one little girl who was having her first experience in bathing became so excited that she forgot to take off her clothes and splashed in. Both Vartui and Virgine are teachers of athletics. They like athletics and enter into the duty with much personal interest. We are armed with two rakes to drag up the green slimy river moss that abounds at the edges of the stream. My idea is to have the children work while they are in the water removing the unsightly decoration to this clear quick flowing water."

(February 1932).

"Last but not least in a health drive comes happiness. January 1932 will be a memorable one for me, because during that month we installed the first seesaw and swing on the terraces of the Clinic and Day Nursery. What joy unconfined! What a restoring of childish bliss! What satisfaction after two years of hard work to hear the village Center ringing with childish laughter. The right chord was struck. It was like seeing the lights on the Place de la Concorde, Paris, go on on the night of November 11, 1918. These children had never laughed, but they had cried much—too often for my peace of mind. The sudden burst of laughter from these poor little silent things recalled the lights of Paris which I had never seen until Armistice night."

(August 1932).

"*Day Nurseries and two volunteer workers*. Now the three Day Nurseries in our three Centers are in full swing. We

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are working very nicely. We have between thirty and forty children in each one of them. The Day Nursery in Moushashen occasionally has Arab children from surrounding villages. Some five or six children from Sluki came almost regularly during the whole month. They would come every morning with a piece of bread and a wooden spoon and a metal plate in their hands. Once we took a carload of children from Ramli to the Day Nursery in Moushashen where they shared with the Armenian children our care and program. It was a demonstration which was successful. The children were delighted and happy as a result of the experiment. They would have liked to come every day if it had been possible.

"To give you a fuller idea of what we are doing in these Day Nurseries, I shall put down a day's program in full :

A.M. 7:30- 8:00	Clinic for examination
8:00- 8:30	Inspection by Day Nursery teacher
8:30- 9:00	Singing
9:00- 9:30	Recess,—Games on seesaw and swing
9:30-10:00	Story period
10:00-10:30	Indoor games
11:00-11:30	Talk on some health subject
11:30-12:00	Preparing for lunch, washing hands, etc.
	Lunch
1:00 - 3:00	Rest period, sleeping
3:00 - 3:30	Recess, washing in the spring, or at well
3:30 - 4:00	Teaching useful things
4:00 - 4:30	Singing, dancing, etc.
4:30	Back home"

(March 1932).

"Our Little Mother's Club which was planted last year, took root, and is in full bloom this spring.

"A unanimous request for permission to use the Day Nursery during the evening hours was very encouraging. There was one stipulation, that they should not destroy, but should preserve it as a haven of refuge.

"The homes of these dear little girls are not, in any manner of means, what they should be, and it was a great reward to feel this spirit of initiative.

"The Day Nursery supports a great deal of wear and tear during the day from twenty six little youngsters, and keeps

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the supervisors busy trying to keep the window screens, walls, etc., from falling apart.

"The Little Mothers study their lessons here, when there is no special program. Virgine is the go-between, and teaches them what she learns from me.

"Our Big Mother's Club also took on new life this spring. They too use the Day Nursery for their meetings, when it is not too busy. I was asked to restart my classes which had been discontinued, and teach them Red Cross nursing. This too has given me fresh inspiration."

(April 1932).

"A new development took place in our Day Nursery during the month. A call was given to the members of our 'Little Mother's Class' to take part in the program of our Day Nursery, each adopting a youngster. Soon thirty 'little mothers' had volunteered. The duties and also the privileges have been that each 'little mother', before going to school in the morning, should go and look for her adopted child at his home, take him by the hand to the village spring, wash his face, hands, and feet thoroughly, and then bring him to the Day Nursery. They return in the evening to take their adopted children once more to the spring and after washing them in the same way take them home to their mothers.

"It is a real joy to see these 'little mothers' performing their duties with cheerful faces, feeling joy in doing service for others, and learning to feel responsibility for others. Besides the help they render to our Day Nursery workers, the real social value, in the spirit of cooperation and unselfishness, means lots more to us, especially when we remember that there are three Arab children in our Day Nursery, enjoying the same care and affection from their new little Armenian mothers as do the Armenian children. A new desirable attitude is being formed in these young girls of these Oriental villages, where the feminine sex, suppressed by all sorts of prejudices and habits, has been isolating itself completely in an ignorant and selfish life."

(May 1931).

"Homes. My co-workers invariably say, 'Where do you get your ideas?' This new one to have meals in different homes, is still very undeveloped, but our first trial worked very well because we selected our home. In the past it has been quite a

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worry to get our meals prepared. We always succeeded in spite of many problems, but it occurred to me that instead of using up our time in this way why not give all of the supplies for the meal to a woman who would prepare our food under Vartui's and Virgine's careful instruction. The idea is to give each home its turn. We shall eat there with the family, and my two girls see that everything is clean. One meal at Moushashen and one at Haiashen have been great successes. The two families were delighted to do this, and the one chosen for the next meal is now preparing everything for our reception. In turn they get a decent meal, and if there is anything that would make things easier for the housewife, and not too expensive, it is added. Some of them need a small piece of board to finish a shelf, and we have many stray pieces from the cases that would not be missed in the inventory. We also have more time to study the home problems as we sit around the humble board."

(July 1931).

"Civic pride is not present, so one's neighbor will leave his skinned dead cow to annoy the others, little realizing that a few precious hours spent digging a hole would make him more respected by all. The fish are cleaned at the beautiful fountain which God has given them for clean use and beauty. Once I put my hand into a fountain and pulled out a chicken's foot that a careless housekeeper had omitted to collect to be disposed of in the correct manner. The dishes are washed right in the stream. They use a great deal of ashes instead of soap. The use of ashes is all right, but how much nicer it would be to dip up a tin of water, and go a few steps on terra firma where the ashes might be useful for future fertilizing, than to have seventy eight families depositing ashes three times a day and to have the stream dirtied by them. The ashes and other obstructions would soon change the stream back again to the condition in which we found it in 1930."

(August 1931).

"*Village health.* Malaria and trachoma are kept well in check at Haiashen and Abdalyuk. Jib Ramli has improved wonderfully. Moushashen is still in the initial stage. The people are very discouraged. We have some intestinal trouble but not a great deal. Many scalps and much impetigo need attention. There are many acute cases of over eating, especially

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by the babies who are allowed to gorge their stomachs with the luscious grapes thereby causing convulsions. The mothers usually deny having fed indigestible food to their children until the enema proves it beyond a doubt. Then they say, 'The Arab peddler came while we were in the garden, and fed the baby grapes, or water melon.' These babies are allowed to feed on 'bourgoul' (cracked wheat), lentils, and uncooked vegetables, until their abdomens are quite distended, and hard to reduce to normal. Of course many have large spleens as well, made worse by overeating. Their only salvation is the day nursery where they will be fed correctly until they are old enough to chew. We are having a great epidemic of conjunctivitis, due to dust and wheat particles. Silver nitrate seems to cure this trouble very rapidly, and as they get prompt treatment we hope to preserve the eyes from further infection from which they have suffered in the past. All the children are wonders at taking quinine solution, and in all the villages are strong and of a ruddy color instead of the sallow hue they all had when we first met them. The Arab people drink anything. They thank you for a dose of castor oil as though it were a most delectable drink.

"*A new opportunity.* An opportunity of meeting the people came, when on the occasion of the Moslem Bayram festival thousands of people from all the villages gathered for a pilgrimage to a certain sheikh's tomb, which is near our Moushashen Center. Upon the special invitation of our people at Jib Ramli we joined the pilgrimage in our health-mobile and had a very interesting time making new friends, sharing in their games, and helping the sick.

"These contacts help us very much to maintain friendly relations with the neighboring people and enable us to meet them on their own ground, thus paving the way for us to render better service and help."

(July 1932).

"*Census.* We made a census of all of our villages during the month. It is our program to take a census once in six months. Probably you do not realize how difficult a task it is to take a census. First of all there is the oriental fear of any census, especially with Arabic-speaking people. Secondly, some of our villages are migratory. However, with hard work and

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persuasion we managed to make a fairly accurate census, which you will see in our Statistical Report for July."

(December 1932).

"The extent of our work and influence. As a closing item of my three years' work, I want to report in full the extent of our work and influence in the Syrian villages where our unit has been working for the last three years. Certainly, our influence has gone far and wide. Our Centers were swamped with the patients coming from varied types of villages. It is in our Centers that wandering Bedouins, Alaouites, Arabs, Armenians, Ismaïliyyah and others meet on common ground for help and demonstration. We have served them all with sympathy and on equal terms. That we have tried to give our best was appreciated by all parties concerned. We have kept good contact and friendly relations with all of them. I enjoyed working with them, so did my girls in the Centers, and I count it a privilege that this opportunity for service and sharing was granted to me.

"We have eight villages under our direct care for which we were responsible. But we were not content to serve them alone. So we opened our Centers for all patients that might come from the villages around. Our Centers have become district Centers, serving almost the whole population of the districts."

APPENDIX VII

Hygienic Status of Bedouin Samples

HYGIENIC STATUS OF BEDOUIN SAMPLES

After most of this book had gone through the press, a further study was completed by Mr. Eliahu Epstein. After training in the author's courses and village surveys, Mr. Epstein succeeded in overcoming many obstacles and with the courteous assistance of various French officials was able to spend five weeks living in different Bedouin encampments between Hama and Palmyra. Mr. Epstein knew Bedouin life thoroughly from previous periods spent in their tents and through a monographic study he had published in Hebrew.*

He administered the full hygiene scale, Form B, to 202 Bedouin families, divided into purely nomadic, semi-settled (plowing for crops part of the year) and settled. The latter still live in tents, but, within the last five years, have lost of their camels and sheep and the poorer ones have been selected by sheer starvation to hire out to landlords, on one fourth and three fourth shares respectively, and live by raising grain exclusively.

A fuller analysis of this study is expected to appear elsewhere. *It may here be noted that the mean scores in hygiene increase with the transition from nomadic to settled life in these samples.* The general tendency has exceptions, as these purely nomadic Bedouins had less eye trouble and were superior in some other respects. But the rigor of their life results in terrific infant mortality.

Table 78 Comparative Hygienic Status of Bedouin Samples

Sample	N	Mean Score	Standard Deviation
Nomadic Bedouins	62	144	13
Partially or recently settled Bedouins	140	182	24
Alaouite peasants	100	285	43
"Normal" rural sample b+c			
Armenian refugees, peasants with urban background	32	321	39
Urban sample	50	654	60

The differences between means are all statistically highly significant. Note the homogeneity of Bedouin culture as reflected in the very small standard deviation of the nomadic sample.

* Epstein, Eliahu, *The Bedouins, Their Life and Customs*, Stiebel, Tel Aviv, 1933, pp. 120.

APPENDIX VIII

Selected and Annotated Bibliography

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 - a. National Association for the Study and Prevention of Tuberculosis, Framingham Community Health and Tuberculosis Demonstration, Framingham Monograph No. 9.
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 - b. Brayne, F. L., Remaking of Village India, Milford, Oxford Univ. Press, 1929, pp. 262.
 - c. Kulp, Country Life in South China, 1925, pp. 367.
 - d. Lynd, R. S. and H. M., Middletown, Harcourt, Brace and Co., 1929, pp. 550. (Especially Chap. XXV, Keeping Healthy).
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- 6. In addition to previous entries, an official government statement of what constitutes "progress", including data on health for a neighboring Arab state, is:
Special Report on the Progress of Iraq, 1919-1930, H.M. Stationery Office, Colonial No. 58, 1931, pp. 331.

*No reports of a Health Department have been published for the part of Syria concerned in this study.

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Dodd, S.C., Progress Inductively Defined, International Journal of Ethics. (Accepted for publication in 1934).

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